

HISTORIC FILL REPORT

BAYONNE BARREL AND DRUM SITE
NEWARK, NEW JERSEY

Prepared for:
Bayonne Barrel Participating Parties Group / *de maximis, inc.*

February 4, 2003

QUEST

**Environmental & Engineering
Services, Inc.**

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1.0 Introduction

This Historic Fill Report has been prepared by Quest Environmental & Engineering Services, Inc. on behalf of *de maximis, inc.* and the Bayonne Barrel Participating Parties Group for the Bayonne Barrel and Drum (BBD) Site located in Newark, New Jersey. This report documents the presence of historic fill at the site. It has been prepared in accordance with the New Jersey Department of Environmental Protection (NJDEP) Technical Requirements for Site Remediation (N.J.A.C. 7:26E).

1.1 Purpose and Objectives

The purpose of this report is to provide the history, types and distribution of historic fill at the BBD site using information provided by prior site investigation reports and review of historic aerial photographs. This report also evaluates the types and concentrations of contaminants that are associated with the historic fill.

1.2 Report Organization

This report is organized into the following sections:

- Section 2: Site Description and History (description of the site and history of known operations and prior environmental site investigations);
- Section 3: Historic Filling (description of the historic filling activities and the types and distribution of fill occurring across the site);
- Section 4: Historic Fill Contaminants (evaluation of the contaminants and concentrations associated with the historic fill); and
- Section 5: References

2.0 Site Description and History

2.1 Site Description

The Bayonne Barrel and Drum site, located at 150-154 Raymond Boulevard in Newark, Essex County, NJ, occupies approximately 15 acres of Block 5002, Lots 3 and 14 (Figure 1). The property has an elongate shape and is bounded by Raymond Boulevard and an exit ramp from Routes 1 and 9 to the north and west, an entrance to the New Jersey Turnpike to the east and south, and a cinema parking lot to the southwest (Figure 2). The nearest residential area to the BBD site is approximately one-half mile away. Ground surface is approximately 20 feet above mean sea level at southwest corner of the property and gradually slopes to the northeast to approximately 5 feet above mean sea level.

Nine (9) buildings exist at the BBD site and are located in the northern portion of the Site. Building descriptions and estimates of the construction dates are summarized below.

Building Number	Floor Area (sq. ft.)	Estimated Construction Date	Description/Use
1	29,000	1967 - 1968	Concrete block building used for reconditioning of closed head drums, and for shot blasting open and closed head drums
2	2,250	1964 - 1965	Drum staging building for preparation for the furnace
	760	1964 - 1965	Furnace for the cleaning of drums
3	14,000	Prior to or during the early 1930's	Concrete and brick building used to receive open head drums immediately after cleaning in the furnace
4	20,000	Late 1951 - 1952	Transite and steel building used for the reconditioning of open head drums
5	4,000	1967	Paint storage building
6	5,400	Prior to or during the early 1930's	Office building
7	9,300	Prior to or during the early 1930's	Machine shop and maintenance garage
8	2,400	1940's	Boiler House
9	1,750	1968 - 1969	Service Building

In addition to the buildings, additional structures at the site include: a water separator trench; a 5,000-gallon underground wastewater settling tank; a 60,000-gallon aboveground tank utilized for settling water prior to discharge to the sewer; four (4) underground tanks near Building No. 8; and a collection/separator trench located adjacent to the furnace. Two (2) additional aboveground storage tanks, which were reportedly never put into service, are located in the wastewater settling tank area. Two thirty-foot gas transmission line easements traverse the site from south to north.

2.2 Site History

The BBD site is believed to have been first developed during or prior to the early 1930's with the construction of Building Nos. 3, 6 and 7 (Figure 2). The original date of construction of these buildings and use are not fully known. One of the original uses is reported to have been a leather tannery. By the mid-1930s, the Bayonne Barrel and Drum Company and a predecessor company, Export Barrel Company, began operations as a drum supplier/drum reconditioning facility. Original operations occupied three acres at the northern end of the property and extended approximately 250 feet east of the site, which is currently occupied by the NJ Turnpike. During the mid-1950s, drum operations expanded with additional building construction and drum storage in the 11-acre area south of the current buildings. In 1982, Bayonne Barrel and Drum Company filed for protection from creditors under Chapter 11 of the Bankruptcy code. Operations ended during 1983. Several tenants utilized the property between 1983 and 1990 for a variety of businesses.

During operations, the BBD facility reconditioned and recycled used drums for resale and reuse. No other products are reported to have been manufactured at the site. Materials used in the drum reconditioning operation included detergents, caustic cleaning solutions, solvent based cleaning solutions, solvent based paints, and thinners. Sources of the reconditioned drums reportedly included food and cosmetics, petrochemicals, herbicides and pesticides, military use, and solid and hazardous waste facilities.

During the 1980s and early 1990's, EPA's Resource Conservation and Recovery Act (RCRA) Branch and the New Jersey Department of Environmental Protection (NJDEP) were involved with the Site. EPA site inspections in 1984, 1988 and 1991 confirmed the presence of numerous CERCLA hazardous substances at the Site, including, but not limited to: polychlorinated biphenyls (PCBs), toluene, trichloroethylene, vinyl chloride, chromium, lead, zinc, benzene and xylene.

Because the BBD site contained approximately 46,000 drums, numerous storage tanks, ash piles and hazardous liquids, the EPA conducted an emergency removal action of materials deemed hazardous to human health and the environment. This work was conducted in 1992 and in 1994-1996.

A number of site investigations characterizing site soils have been conducted at the site since 1985 for various purposes. The following is a list of these investigations.

- 1985 Soil and Ground Water Characterization conducted by Dan Raviv Associates, Inc.
- 1986 Preliminary Site Investigation conducted by Louis Berger & Associates for the New Jersey Turnpike Authority in a proposed New Jersey Turnpike Right-of-Way.
- 1997 Soil Investigation conducted by Blasland, Bouck & Lee, Inc.
- 2002 Soil Investigation conducted by Quest Environmental & Engineering Services, Inc.

Information on soil types and contaminant concentrations obtained by these investigations were reviewed for evaluating historic fill. Reports prepared as a result of these investigation are listed in Section 5: References. Copies of boring logs and soil descriptions appearing in these reports are provided in Appendix A. The following is a list of constituents of concern (COCs) for the site based on these prior assessments:

- | | |
|------------------------------------|-----------|
| • Pesticides | • Metals |
| • Volatile Organic Compounds | • PCBs |
| • Polycyclic Aromatic Hydrocarbons | • Dioxins |
| • Total Petroleum Hydrocarbons | |

3.0 Historic Fill

The NJDEP Technical Requirements for Site Remediation (N.J.A.C 7:26E) defines historic fill as non-indigenous material deposited to raise the topographic elevation of the site, which was contaminated prior to emplacement, and is in no way connected with the operations at the location of emplacement and which includes without limitation, construction debris, dredge spoils, incinerator residue, demolition debris, fly ash, or non-hazardous solid waste. Historic fill does not include material that is substantially chromate or other chemical production waste, waste from processing of metal/mineral ores, residues, slag or tailing, or a municipal solid waste landfill site. The following subsections describe the history, types and distribution of historic fill at the BBD site.

3.1 Fill History

This section presents a chronological narrative of significant physical changes that have impacted the site's environmental setting, based on review of historic aerial photographs and site history prepared from information available in previous reports (see References).

Pre-1940

The Bayonne Barrel and Drum site originally was wetlands/floodplain associated with the Passaic River, which is approximately 1,800 feet east of the property. An 1889 historic map shown as Figure 3 depicts this area along the Passaic River as the "Newark Meadows". The site was originally developed sometime during or prior to the early 1930's with the construction of the original buildings (Nos. 3, 6 and 7) at the northernmost portion of the site. Fill occurring beneath these oldest buildings is primarily composed of coal ash and cinders. Coal was a primary source of heating fuel during this time. The ash produced from the burning of coal was an abundant source of fill, particularly in urban areas. Drum operations are believed to have begun during or just prior to 1934 based on a 1934 aerial photograph (not shown) indicating the presence of drums (Diversified Environmental, 1992).

1940

Figure 4 is an aerial photograph that was taken on April 6, 1940, which was circa the time when the Bayonne Steel Drum Company merged with Export Barrel Company to

form the Bayonne Barrel and Drum Company. The photograph shows the site buildings and operations located in the northern-most portion of the property. Site operations include one building extending approximately 250 feet east of the current property boundary. A large disturbed area is evident in the central and southern portions of the current property boundary and extends further to south and southeast. This disturbed area is a landfill operation known as the 15E Landfill, which was operated by the City of Newark during the 1930's to 1950's. The landfill commenced operation south of the BBD site at Foundry Street sometime during or prior to the early 1930's and progressed north onto the BBD site by 1940. Soil borings completed on site within the limits of the landfill describe the fill material as containing sand and ash/cinders with construction debris including glass, brick, metal, cement, and wood (Raviv, 1986; Berger 1986; and BBL 1997). Test pits that were excavated in the landfill at the adjacent property to the south describe the landfill material as "ash material (plus bottles and metal) from municipal and/or private incineration of household waste. Other common fill included a black tar-like residue, bricks, glass, metal, asphalt, wire and cable, and other construction and demolition debris" (Wehran, 1988). Therefore, based on these descriptions, the landfill material is composed of sand, incinerator residue/ash, and construction/demolition debris, which meets the definition of historic fill.

An undisturbed/undeveloped area occurs east of the landfill and southeast of the drum operations area. Manmade drainage channels dissect this area. The channels drain toward the east to Harrison Ditch.

1947

Figure 5 is an aerial photograph that was taken on April 28, 1947. The photograph shows BBD operations still limited to the northern portion of the site. A substantially greater amount of drum storage is evident compared to the 1940 aerial photograph. The eastern most building was razed and a new building was constructed at the northeast corner of the building complex. In addition, a surface impoundment with dimensions of approximately 140 feet by 160 feet existed immediately south of the drum storage area. The surface impoundment was reported to have received liquid wastes from the drum reconditioning operations. A portion of this former impoundment straddles the current eastern site boundary. The landfill had expanded further onto the BBD site, covering the southern two-thirds of the current site boundary. The small area south of the impoundment and north of the landfill still appeared to be largely unfilled at this time.

1950

Figures 6 and 7 are low-angle aerial photographs that were taken sometime during 1950. Figure 6 presents a view toward the south, and Figure 7 presents a view of the northern portion of the site toward the west. The photographs show landfill operations continuing in the southern portion of the property and the unfilled grassy area remaining just south of the surface impoundment. The area west of the surface impoundment has been graded for additional drum storage. Approximately 20 drums were placed in this graded area at the time of the photograph. The initial construction of the NJ Turnpike is observed in the lower left foreground of Figure 6. The eastern most drum storage area shown in the 1947 aerial photograph was condemned and occupied by the NJ Turnpike.

During the early 1950's, BBD expanded operations to the south by leasing a 5.5-acre property known as the Langella property and acquiring a 4-acre property from the Episcopal Diocese of Newark property. The Langella property was located in the western portion of the southern two-thirds of the current site and was part of the 15E Landfill. The Episcopal Diocese property was located in the southeastern portion of the current site and was partially covered by the 15E Landfill at its western end with the eastern portion remaining as wetlands.

1953

Figure 8 presents an aerial photograph taken on December 5, 1953. The photograph shows drum storage in the graded areas west of the surface impoundment and in areas to south. The 20,000 square-foot Building No. 4 (open head drum reconditioning) is constructed at this time. The surface impoundment still existed and drainage channels are observed to the south and east. Landfill operations appeared to have ceased at the site, but continued at the adjacent property to the south. The southern portion of the site was not entirely graded, and the grassy wetland area remained south of the lagoon. The NJ Turnpike construction was completed by this time.

During the early 1950's it was reported that BBD had contracted with McCaffery Contracting Co. of Newark to fill the Episcopal Diocese property with bottom ash from the Public Service Electric & Gas generating station that was located north of the site (Diversified Environmental, 1992). Filling activities in this portion of the site are evident in this 1953 photograph, where the wetland area is located at southeast portion of the property just north of the NJ turnpike loop.

1959

The 1959 aerial photograph (Figure 9) shows that drum storage expanded fully within the southern and central portions of the property. The surface impoundment was filled by this time, which is indicated by the light discolored area. The wetland area south of the surface impoundment also appeared to be largely filled at this time. A drainage channel existed along the eastern boundary of the property adjacent to the NJ Turnpike, which appeared to drain to a trench located east of the former surface impoundment. A small new building was constructed adjacent to the southeast corner of Building No. 4.

1969

Figures 10 and 11 present low-angle photographs taken on June 4, 1969. Figure 10 is a view toward the east and Figure 11 is a view toward the north. The major change to the site evident in the photograph was the western expansion of the NJ Turnpike onto the BBD site, which resulted in the loss of approximately 200 feet of the northeastern portion of the site, including removal of the eastern most buildings shown in Figure 9. Rows of drum storage continued in the central and southern portions of the site. Building Nos. 1, 2 and 5 were constructed by this time. A conveyor extended approximately 250 feet south of Building No. 2/Furnace with drums clustered around the conveyor. In addition, aboveground storage tanks were constructed east of Building No. 1. Other than the Turnpike construction, no significant filling activities are evident in these photographs.

1973 and 1982

The 1973 and 1982 photographs (Figures 12 and 13) show similar uses of the property as in the 1969 aerial photographs. No further filling is evident in these photographs. An ash pile occurs at the western most drum row from the south.

3.2 Historic Fill Types and Distribution

Historic aerial photographs and prior soil sampling indicate that the entire property has been filled with non-indigenous material at times during or prior to the early 1930's through the 1950's. The site can be divided into three general areas of filling that occurred at different times. These areas are shown in Figure 14 and include: (1) filling associated with the initial development of the site that occurred during or prior to the early 1930's, (2) filling associated with the 15E Landfill that occurred during the 1940's to the early 1950's, and (3) filling associated with the former surface impoundment and remaining wetland area that was part of the Episcopal Diocese of Newark property during

the mid-1950's. The following is a description of the fill in each of these areas and the native soil underlying the fill.

Native Soil

Figure 15 provides cross-sections of the site showing the thickness and subsurface distribution of the fill and the depth to native soil. Native soil consists of an organic clay/meadow mat associated with the wetlands/flood plain in this area. It is described in boring logs and soil descriptions appearing in Appendix A as a gray sandy clay (YA-1), brown clay (YA-3) or brown-gray-black clay with organic material/meadow mat (BLDG borings). The thickness of this organic clay/meadow mat is approximately 2 - 3 feet. Underlying the organic clay/meadow mat is a red-brown, fine to medium grained sand of glacial origin. The elevation of the native soil is approximately 2 to 4 feet above mean sea level. Therefore, soil above this elevation consists entirely of fill material.

Initial Site Development Fill

The fill material within the northern portion of the site in the vicinity of the buildings consists primarily of coal ash and cinders with occasional fragments of brick, glass or slag (see logs for BLDG borings). The fill was emplaced to raise the ground surface for the initial building construction and industrial use of the property. This material is approximately 4 to 5 feet thick in this area.

15E Landfill

The fill that covers a majority of the southern and central portions of the site is associated with the 15E Landfill. The northernmost extent of this fill underlies a portion of the buildings. The fill material consists primarily of sand, ash/cinders and demolition debris including glass, brick, metal, cement, and wood. There are no organic wastes typical of a municipal solid waste landfill. The fill varies in thickness from approximately fifteen feet at the southwest corner of the site (YA-1) to eight or ten feet in the central portion of the site (YA-5) and six feet at the southeastern end of the landfill area (YA-4). Its thickness generally mirrors the change in topographic elevation. The upper four to ten feet of this fill layer appears to contain a greater amount of ash and demolition debris than the lower 2 to 6 feet overlying the native soil. The BBL soil descriptions generally refer to the fill as having black staining, which appears to be related to the presence of coal ash and cinders. The 1986 Raviv report refers to this fill as a black coal-ash type cinder fill. The same material also occurs at the multiplex theater property to the south.

Central Eastern Boundary

This area includes the former surface impoundment and the area immediately to the south that was part of the Episcopal Diocese property purchased during the mid-1950's. This area was filled from approximately 1953 to 1958. The 1953 aerial photograph shows the surface impoundment remaining and initial filling of the last original wetland area. By 1959, the entire area is nearly filled. The fill in the vicinity of the former surface impoundment consists largely of brown to black sand (STA-2, STA-3, and YA-51). The fill in the area to the south is described as brown to black silt and sand with cinders and debris (e.g. glass, brick, wood, etc.), which is similar to the landfill material (YA-3, YA-50, YA-54, M1190/1191). Filling in this area was reported to have consisted largely of bottom ash from coal incineration, although landfill material (demolition debris) occurs in portions of this area. The thickness of the fill in this area is estimated to be approximately four to six feet.

In summary, the historic fill present on site predominantly consists of sand and coal cinder/ash material with various amounts of construction and demolition debris. The historic fill does not include material which is substantially chromate chemical production waste or other chemical production waste or waste from processing of metal or mineral ores, residues slag or tailings. In addition, there is no evidence that the fill material constitutes a municipal solid waste.

4.0 Historic Fill Contaminants

Types and relative concentrations of historic fill contaminants were evaluated using prior soil sample data and also by comparison to soil sample data obtained from the adjacent multiplex theater site, which is also a part of the 15E Landfill. This property was originally developed as a drive-in theater during the mid-1950's. The thickness of the landfill material at the theater site varies from five to eleven feet (Wehran, 1988). Appendix B provides copies of the sample data summary tables and sample location maps from two site investigations conducted at the theater property (1988 Wehran Report; 1990 Berger Report).

Approximately 140 locations were sampled across the Bayonne Barrel and Drum (BBD) site. A majority of the samples collected at these locations were obtained from surface soil (0-2 feet). Vertical profile samples were collected for various analytical parameters at less than 15 locations within the fill. Appendix C contains copies of data summary figures. The figures indicate that there is a variety of contaminants in soil that exceed NJDEP Non-Residential Direct Contact Soil Cleanup Criteria and some of the contaminants are widespread across the site such as metals, PAHs, PCBs, and Dioxin.

Initial Site Development Fill

Contaminant concentrations associated with the ash fill in this area were evaluated using samples collected from beneath Building Nos. 3, 4 (northern section), 5, 6, 7 and 8, which were least likely to have been impacted by historic site operations or the presence of the 15E Landfill material. In this evaluation, the median concentration and maximum concentration are presented to assess potential contributions from historic fill. The sample median is used rather than the arithmetic mean in order to minimize the effect of one or two elevated sample concentrations that can significantly skew the mean concentration, given the comparatively small sample population in this area. Concentrations of metals and polycyclic aromatic hydrocarbons are also compared to the NJDEP Historic Fill Data (Appendix D of the NJDEP Technical Requirements of Site Remediation).

Only those contaminants that were commonly detected at concentrations exceeding NJ Non-Residential Direct Contact Soil Cleanup Criteria (NRDCSCC) in the northern

portion of the site were evaluated. For the PAHs, benzo(a)pyrene and benzo(a)anthracene were selected to be representative of the carcinogenic PAHs detected in the fill. VOCs were not considered due to the small probability of being associated with a coal ash fill. The following table summarizes the results.

Parameter	Sample Population	Median	Maximum	NJ Historic Fill Average	NJ Historic Fill Maximum	NJ NRDCSCC
<u>Metals (mg/kg):</u>						
Arsenic	9	4.6	96.5	13.2	1,096	20
Copper	9	137	1,670	na	na	600
Lead	9	623	2,860	574	10,700	600
Zinc	9	445	2,250	575	10,900	1,500
<u>PAHs (mg/kg)</u>						
benzo(a)pyrene	9	1.9	14	1.89	120	0.66
benzo(a)anthracene	9	1.5	15	1.37	160	4
PCBs (mg/kg)	9	0.21	3.7	na	na	2
TPH (mg/kg)	9	217	1,150	na	na	10,000
<u>Pesticides</u>						
4,4' DDE	9	0.018	0.16	na	na	9
Dioxin (ug/kg equiv)	3 ^a	0.17	0.26	na	na	na

^a Dioxin sample concentrations as total toxic equivalent 2,3,7,8-TCDD are 0.04, 0.17, and 0.26 ppb

Metals, such as arsenic, lead, copper and zinc, and carcinogenic PAHs are typical components of a coal ash type fill. The median and maximum concentrations of these constituents in the coal ash fill are within the average and maximum concentrations reported in the NJDEP Historic Fill Database. Therefore, it is believed that the metals and PAHs in this area are due primarily to the fill, rather than historic operations. Low levels of TPH, Dioxin and PCBs within the range of the median and maximum concentrations may also be associated with the fill, although contributions from site operations cannot be ruled out. PCBs were manufactured beginning in the 1920s and therefore existed during the probable time of initial filling of this area (circa early 1930s). The presence of dioxins in ash material is possible from incomplete combustion of organic materials.

15E Landfill/Central Eastern Boundary

Contaminant concentrations for the 15E Landfill material were also evaluated as above and compared to the concentrations detected at the multiplex theater property located

south of the BBD site, where the 15E Landfill also occurs. The fill at the Central Eastern Boundary area is also included with the 15E Landfill because this fill is very similar to the descriptions of the landfill material, which contains a significant portion of coal ash in addition to demolition debris. The 90th percentile concentrations were also calculated to present the level in which most samples fall, given that the sample population is larger for this area (>25 samples). The 90th percentile concentration represents the concentration within which 90 percent of the sample concentrations occur. The following table summarizes the results.

Parameter	BBD SP	BBD Median	90th Pnctile	BBD Max.	Historic Fill Avg	Historic Fill Max.	Th. SP	Theater Median	Theater Max.	NJ NRDCSCC
Metals (mg/kg):										
Arsenic	32	20	92.5	390	13.2	1,096	17	25	1,200	20
Copper	30	233	1,850	15,500	na	na	17	261	2,560	600
Lead	84	1,650	8,300	198,000	574	10,700	17	1,340	15,400	600
Zinc	30	758	6,005	12,200	575	10,900	17	733	2,830	1,500
PAHs (mg/kg)										
benzo(a)pyrene	64	2.2	12	18	1.89	120	17	10	530	0.66
benzo(a)anthrac.	64	1.7	16	22	1.37	160	17	9.3	760	4
PCBs (mg/kg)	109	9.8	83.1	3,520	na	na	17	<DL ^a	23	2
TPH (mg/kg)	45	1,390	12,460	173,000	na	na	17	608	2,970	10,000
Pesticides										
4,4' DDE	15	0.003	na	0.95	na	na	17	0.091	3.5	9
4,4' DDD	15	0.007	na	0.84	na	na	17	0.24	68	12
4,4' DDT	15	<DL ^b	na	0.86	na	na	17	<DL ^c	9.2	9
Dioxin (ug/kg)	66	2.74	61	542	na	na	na	na	na	na

SP = Sample Population

a 14 of 17 PCB samples were reported at less than detection limits (DL)

b 13 of 15 4,4' DDT samples were less than detection limits (DL)

c 9 of 17 4,4' DDT samples were less than detection limits (DL)

Median and maximum concentrations of metals detected in the landfill material generally are higher than the values reported in the Historic Fill database. The 90th percentile levels, however, fall within the maximum Historic Fill values, suggesting that most of the landfill material conforms to the Historic Fill database. Median metal concentrations are similar to those detected at the multiplex theater site, indicating that the landfill material contributes similar concentrations to each site. Maximum values for

copper, lead, and zinc are substantially higher than detected at the multiplex theater site, which may be in part due to the larger sample population at the BBD site that increases the probability of detecting elevated "hot spot" locations. Contributions from site operations, however, cannot be entirely ruled out by this comparison.

The median, maximum and 90th percentile PAH concentrations are similar to the Historic Fill database values, but are substantially less than the multiplex theater site values. Pesticide concentrations at the BBD site are also generally less than the multiplex theater site. The presence of pesticides in the landfill material at the adjacent theater property suggests that the landfill material also contributes pesticides to the BBD site.

Concentrations of PCBs detected in the landfill material at the BBD site are substantially higher than detected at the multiplex theater site. Fourteen of the 17 samples collected at the theater site did not detect the presence of PCBs, while most of the samples collected at the BBD site detected PCBs. Based on this result, the landfill material does not appear to be a primary source of PCBs detected in the central and southern portions of the BBD site. Therefore, historic operations may be largely responsible for the PCBs.

Median and maximum levels of total petroleum hydrocarbons detected at the BBD site are greater than at the multiplex theater site, which also may be in part due to the larger sample population at the BBD site. However, historic site operations may have contributed to TPH levels, as with PCBs.

The median concentration of dioxin detected in the area of the landfill material is 2.7 ppb with 90% of the sample concentrations within 61 ppb. Levels detected in this area are generally substantially higher than detected in the coal ash fill underlying the building area. Dioxin was not analyzed in the theater property samples.

Examining the vertical distribution of contaminant concentrations within the fill can provide further assessment of historic fill contributions versus site operations. Typically, historic fill will not exhibit a consistent vertical concentration gradient because contaminant concentrations generally are randomly distributed within the fill. Vertical distributions resulting from surface discharges, however, typically do exhibit a decreasing vertical gradient from the surface, particularly for contaminants that are not highly mobile (e.g. metals, PCBs, dioxins). The following table presents five sample locations

within the 15E Landfill area where samples were collected vertically at three two-foot intervals at each location. Despite being limited by the number of locations and depth intervals, the data show the relative tendency for the occurrence of a vertical gradient for each of the listed contaminants. The data indicate that PCBs and Dioxins tend to exhibit a strong vertical gradient from the surface at each location where detected, while the occurrence of a vertical gradient for the metals, PAHs, and 4,4-DDE is not as consistent. This suggests that the presence of PCBs and Dioxins are more related to site operations than historic fill.

Vertical Profile Samples

Boring	4,4'-DDE (mg/kg)	PCBs (mg/kg)	Total Dioxin (ug/kg)	Arsenic (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	Copper (mg/kg)	B(a)A (mg/kg)	B(a) P (mg/kg)
YA-1(0-2)	0.12	10.3	3.42	34.8	3,240	3,260	1,710	6.7	5.9
YA-1(7-9)	0.0088	1.5	0.16	7.74	942	330	91	4	3.3
YA-1(14-16)	0.00084	0.05	0.0039	2.46	78	97	13	0.081 J	0.06 J
YA-2(0-2)	0.002 J	0.04 U	0.043	97.9	1,350	939	225	2.2	2.3
YA-2(4-6)	0.004 U	0.04 U	0	22.9	2,280	11,700	148	0.13	0.1 J
YA-2(8-10)	0.0038 U	0.038 U	0	3.3	9.0	326	11	0.11 U	0.11 U
YA-3(0-2)	0.38	22.5	4.11	111	4,780	3,350	847	18	13
YA-3(2-4)	0.46	5.9	2.73	65.7	2,170	1,700	546	14	9.5
YA-3(4-6)	0.026	0.2	0.2	80.2	575	719	466	3.2	3.7
YA-4(0-2)	0.95	231.0	212.29	4.88	1,110	389	120	2.4	2.2
YA-4(3-5)	0.13	26.4	8.6	15.7	1,880	1,450	1,870	2.2	2
YA-4(6-8)	0.046 U	5.0	0.61	26	876	797	242	2.3	2.8
YA-5(0-2)	0.097 U	13.4	1.18	8.72	520	287	84	3	2.8
YA-5(3-5)	0.0044 U	0.2	0	7.9	1,240	614	102	3.4	3.9
YA-5(6-8)	0.003 J	0.7	0	28.8	1,490	2,180	155	1.2	1.1

5.0 REFERENCES

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2. Louis Berger and Associates, Inc., September 1986. Preliminary Site Investigations New Jersey Turnpike at the Former Newark Drive-In Property, Newark, New Jersey.
3. Dan Raviv Associates, Inc., April 18, 1986, updated July 1986. Soils and Ground Water Characterization Bayonne Barrel and Drum Company, Newark, New Jersey, Job No. 84C182.
4. Wehran Engineering Corporation, October 1988. Summary Report of the Test Pit and Monitoring Well Investigation at the Newark Drive-In Site.
5. Diversified Environmental Resources, Inc., and Environmental Risk Limited, Volume I, February 1992. RCRA Closure Plan and CERCLA Removal for Bayonne Barrel and Drum Company, Newark, New Jersey.
6. Blasland, Bouck & Lee, Inc., March 1997. Bayonne Barrel and Drum Site – Soil Investigation Report.
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FIGURES

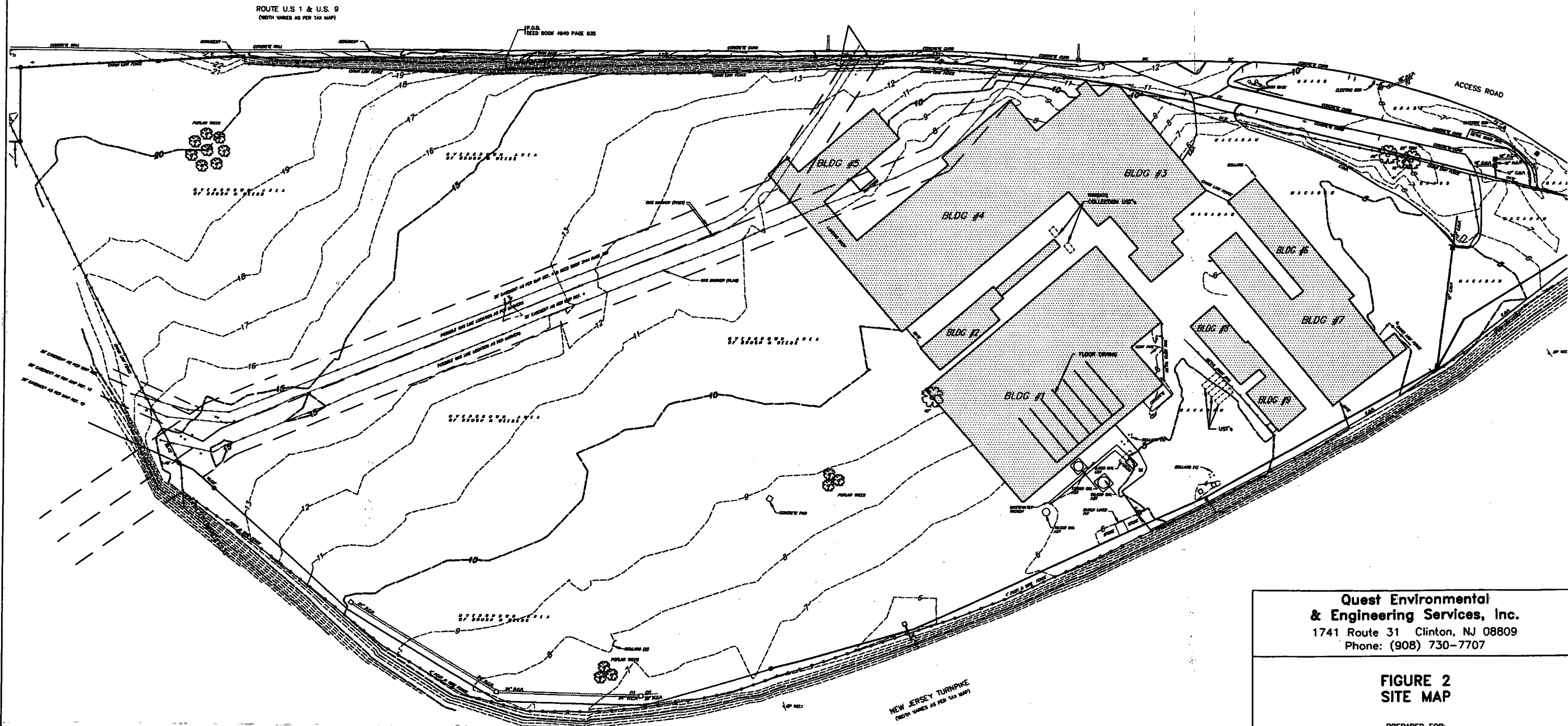


Source: 7.5 Minute Series
 Topographic Maps
 Elizabeth & Jersey City, NJ-NY Quadrangles
 Scale: 1" = 2,000'



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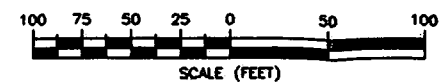
Figure 1
 Site Location Map
 Bayonne Barrel and Drum Company
 Newark, New Jersey



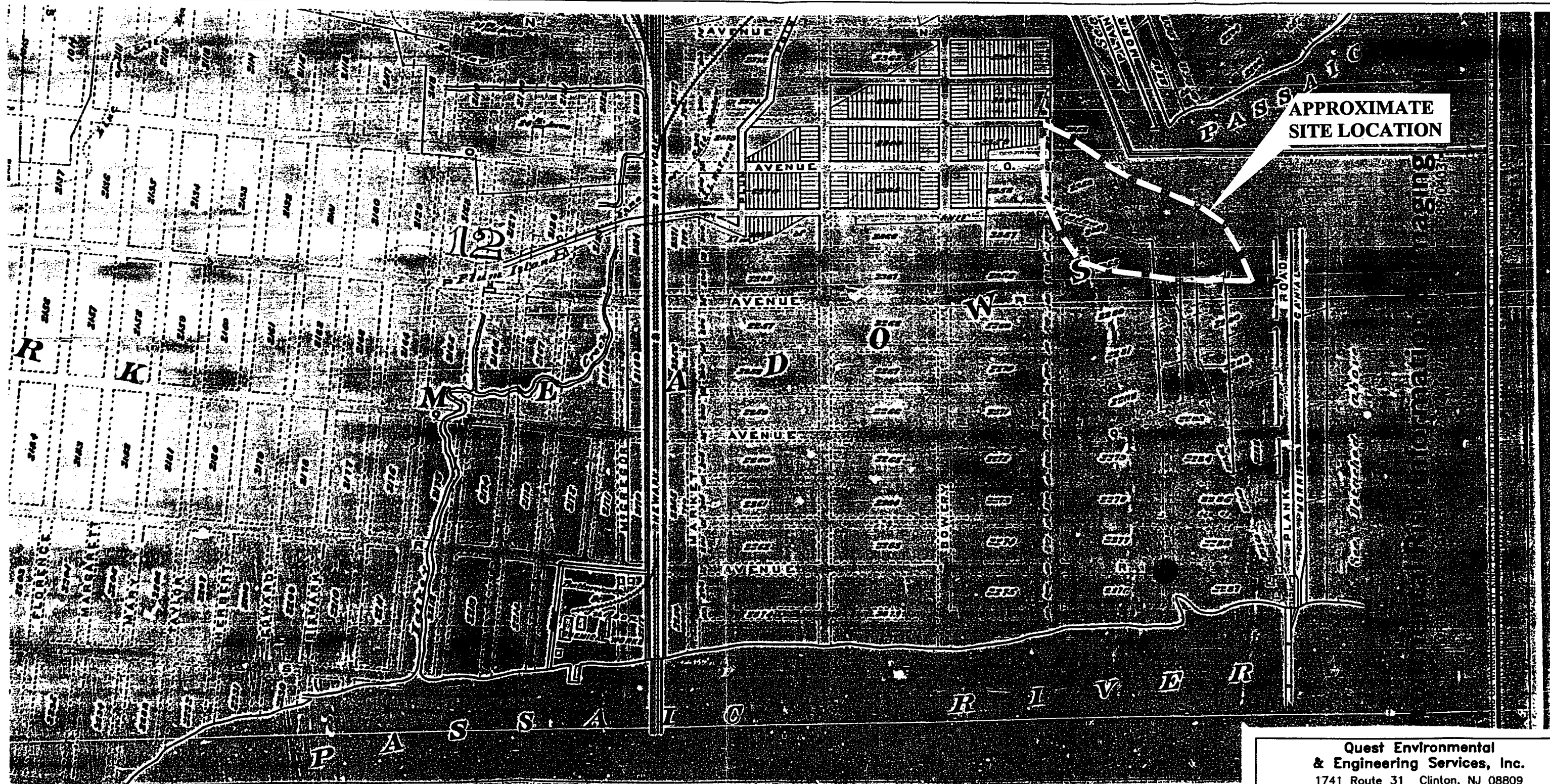
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FIGURE 2
SITE MAP

PREPARED FOR:
BAYONNE BARREL & DRUM SITE
NEWARK, NEW JERSEY



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12/26/02	ENG.	CAD FILE NO. BBD-023		0
	APPVD.	SHEET NO. 1 OF 1		



APPROXIMATE
SITE LOCATION

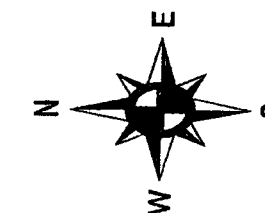
3' TITLE COMPANY HAS ALL THE OFFICIAL ABSTRACTS FOR THE PAST 35 YEARS, 800

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FIGURE 3
1889 HISTORIC MAP

PREPARED FOR:
BAYONNE BARREL & DRUM SITE
NEWARK, NEW JERSEY

DATE	CHK'D: DB	SCALE:	DRAWING NO.	REV. NO.
12/17/02	ENG.	CAD FILE NO. BBD-019		0
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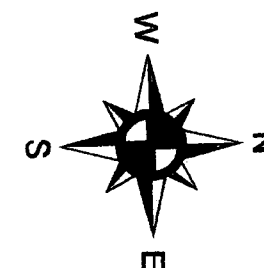


LEGEND

..... Approximate
location of current
site boundaries

FIGURE 4
Bayonne Barrel & Drum
Newark, New Jersey
Scale: 1 in = ~140 ft Date: 4-6-40
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NOTE: Aerial Photos have been scanned and merged, minor deflections may be present.



LEGEND

--- Approximate location
of current site boundaries

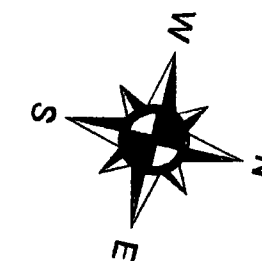
FIGURE 5

**Bayonne Barrel & Drum
Newark, New Jersey**

Scale: 1 in = ~ 175 ft Date: 4-28-47

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LEGEND

Approximate location of current site boundaries

FIGURE 6
Bayonne Barrel & Drum
Newark, New Jersey
Scale: NA Date: est. 1950

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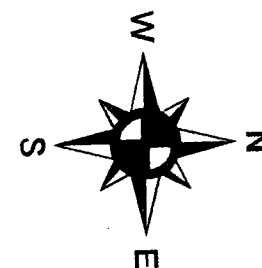
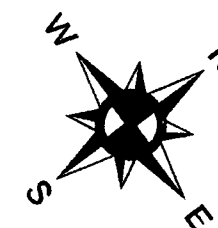
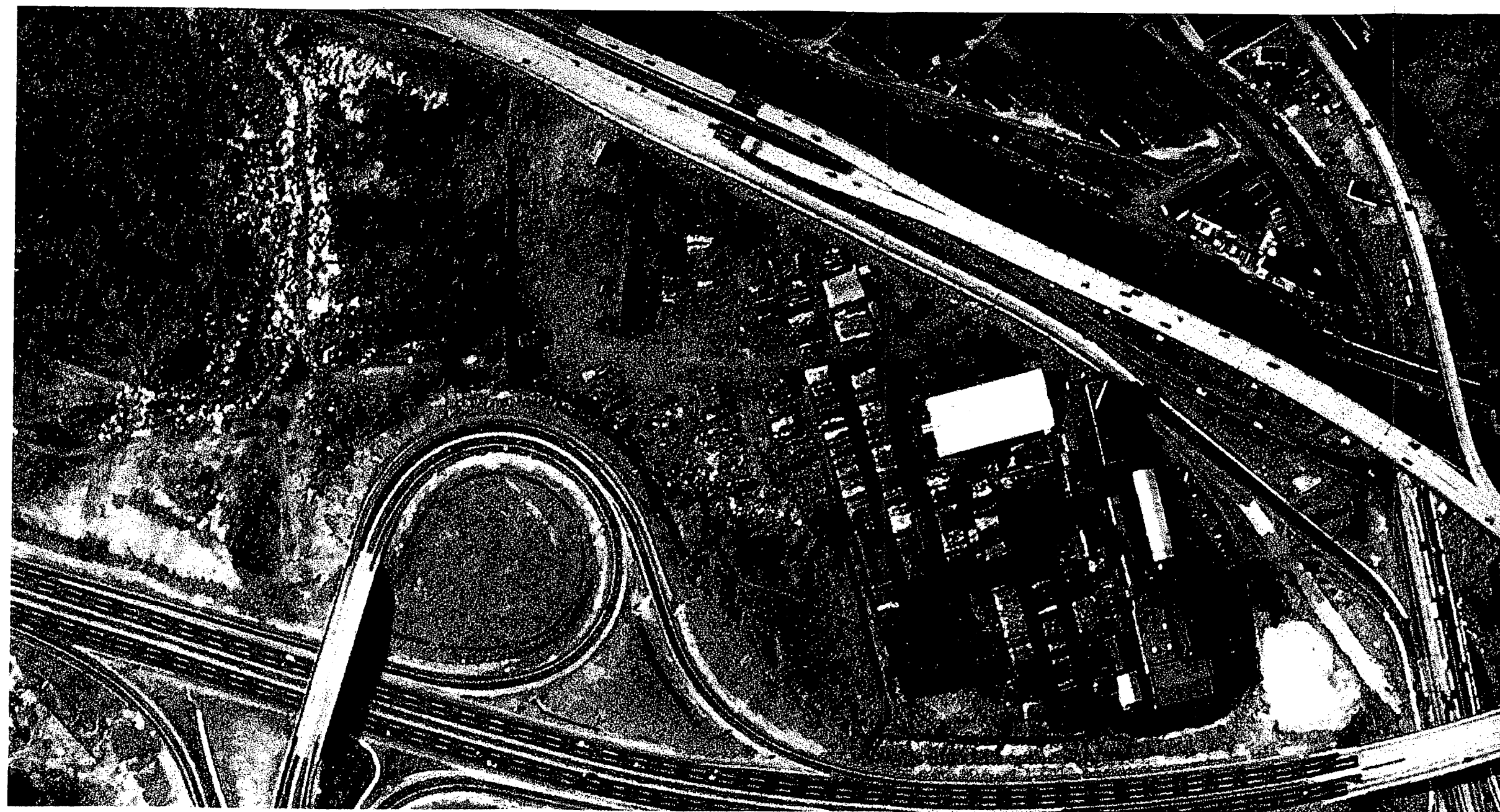


FIGURE 7

**Bayonne Barrel & Drum
Newark, New Jersey
Scale: NA Date: est. 1950**

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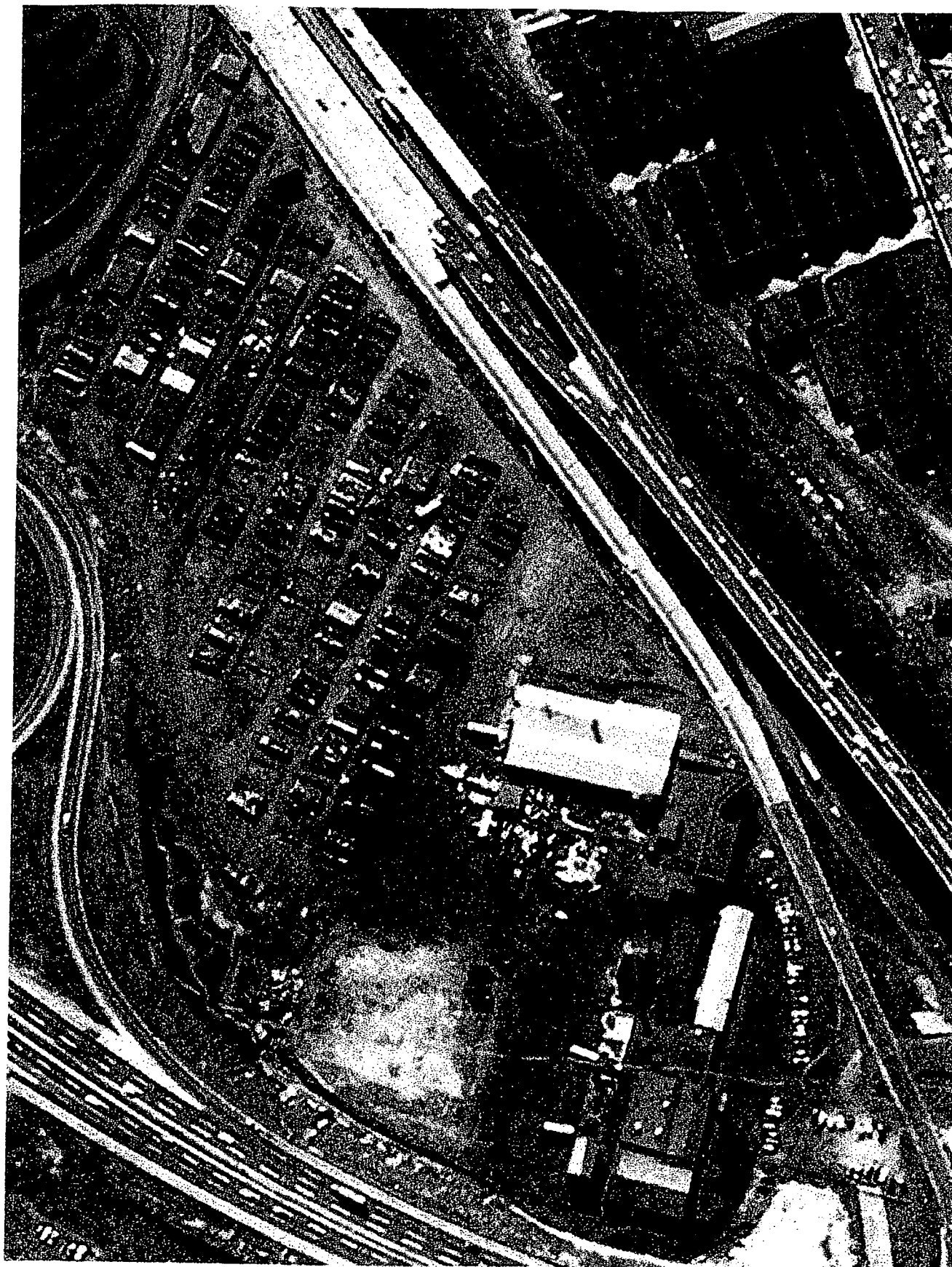
NOTE: Aerial Photos have been scanned and merged, minor deflections may be present.

FIGURE 8

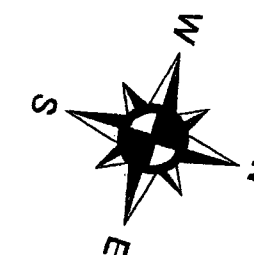
**Bayonne Barrel & Drum
Newark, New Jersey**

Scale: 1 in = ~200 ft Date: 12-5-53

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LEGEND

--- Approximate location of
current site boundary.

FIGURE 9

**Bayonne Barrel & Drum
Newark, New Jersey**

Scale: 1 in = ~175 ft Date: 4-15-59

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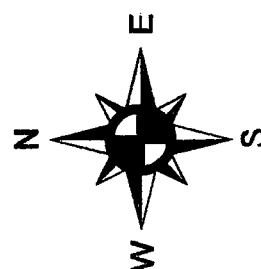


FIGURE 10
Bayonne Barrel & Drum
Newark, New Jersey
Scale: NA Date: 6-4-69

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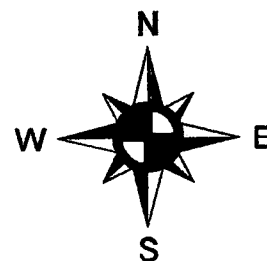


FIGURE 11
Bayonne Barrel & Drum
Newark, New Jersey
Scale: NA Date: 6-4-69

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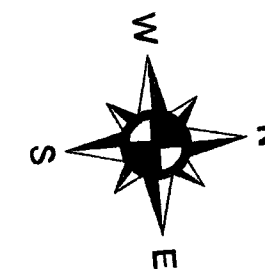


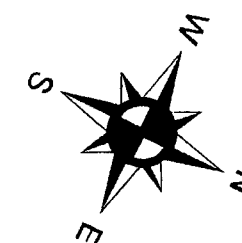
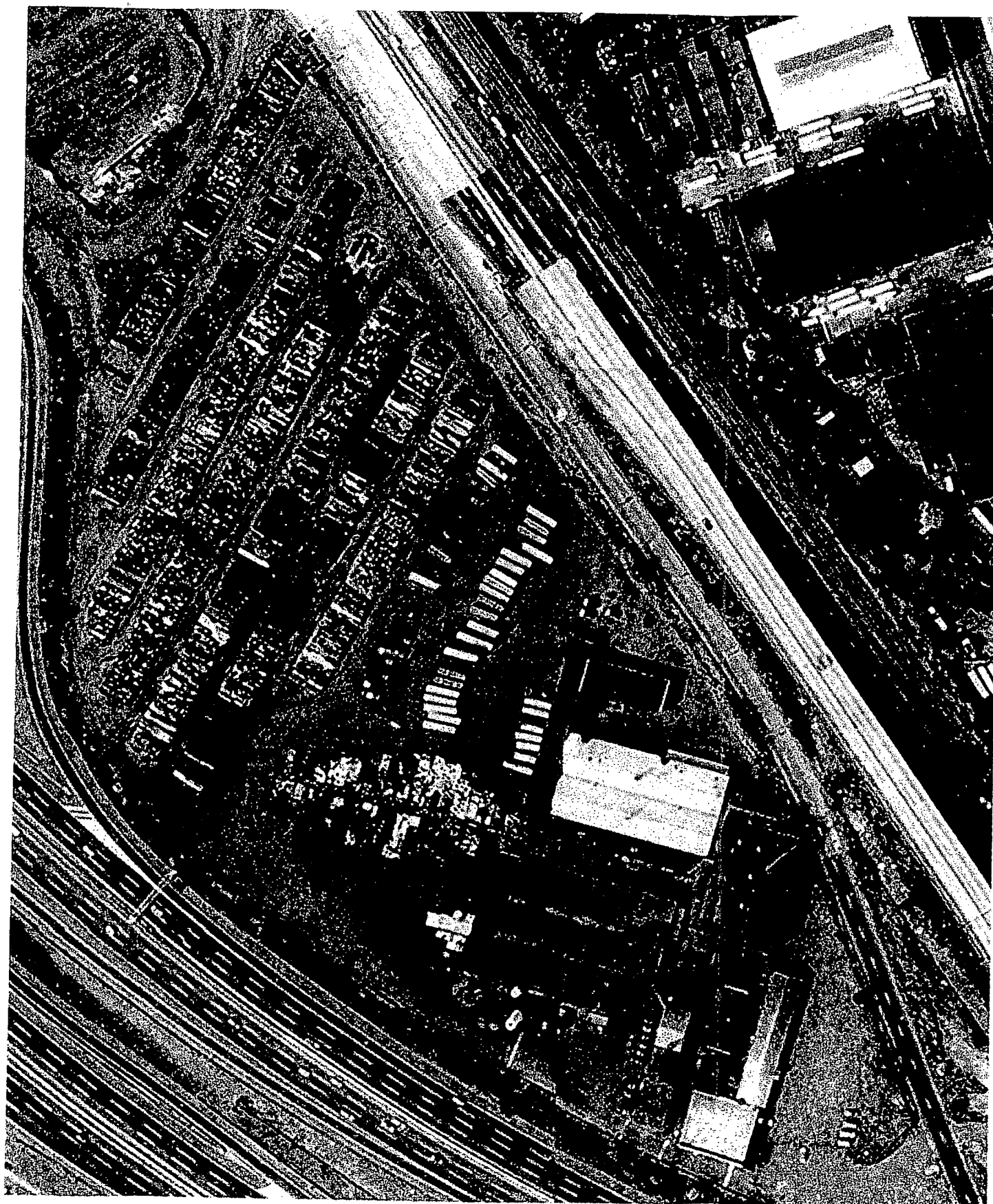
FIGURE 12

**Bayonne Barrel & Drum
Newark, New Jersey**

Scale: 1 in = ~130 ft Date: 4-15-73

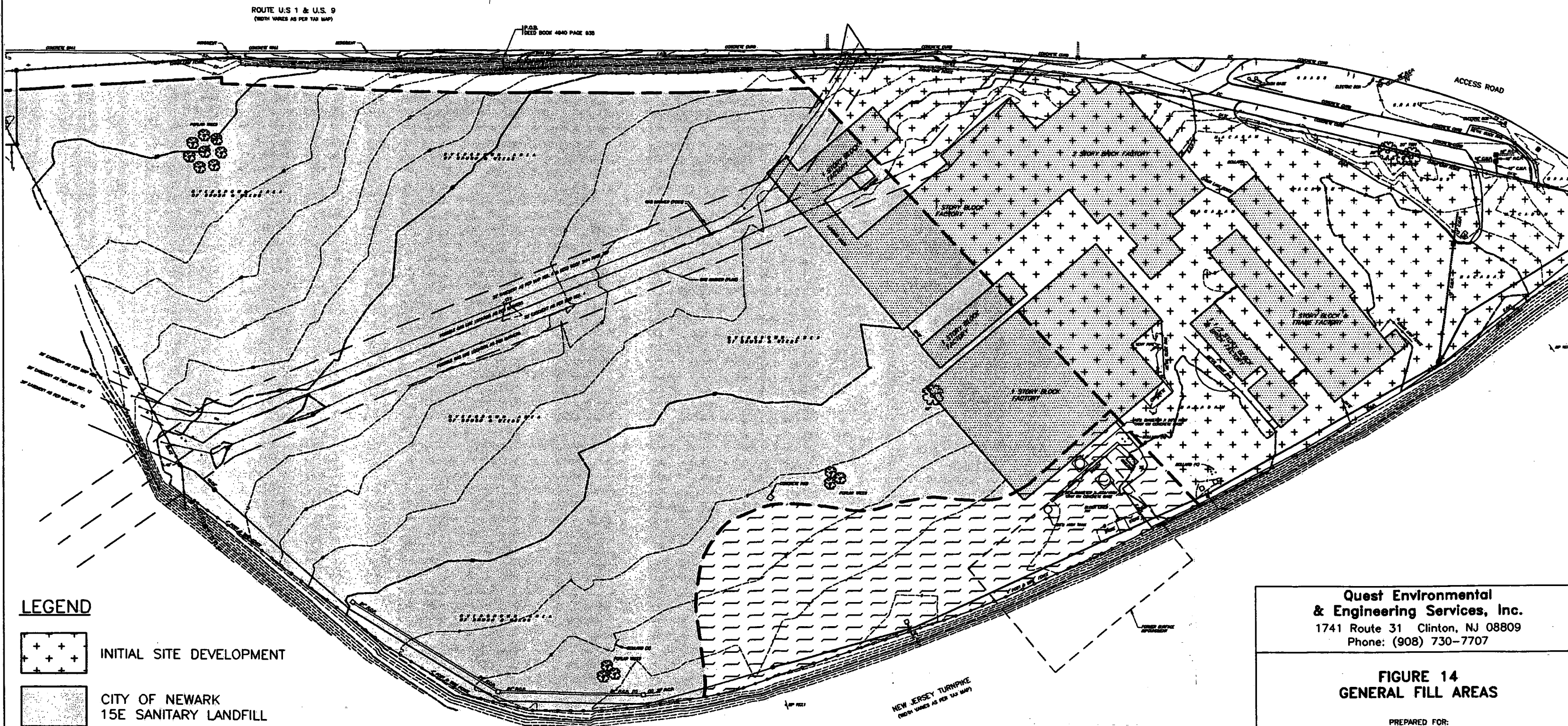
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NOTE: Aerial Photos have been scanned and merged, minor deflections may be present.

FIGURE 13
Bayonne Barrel & Drum
Newark, New Jersey
Scale: 1 in = ~155 ft Date: 10-23-82
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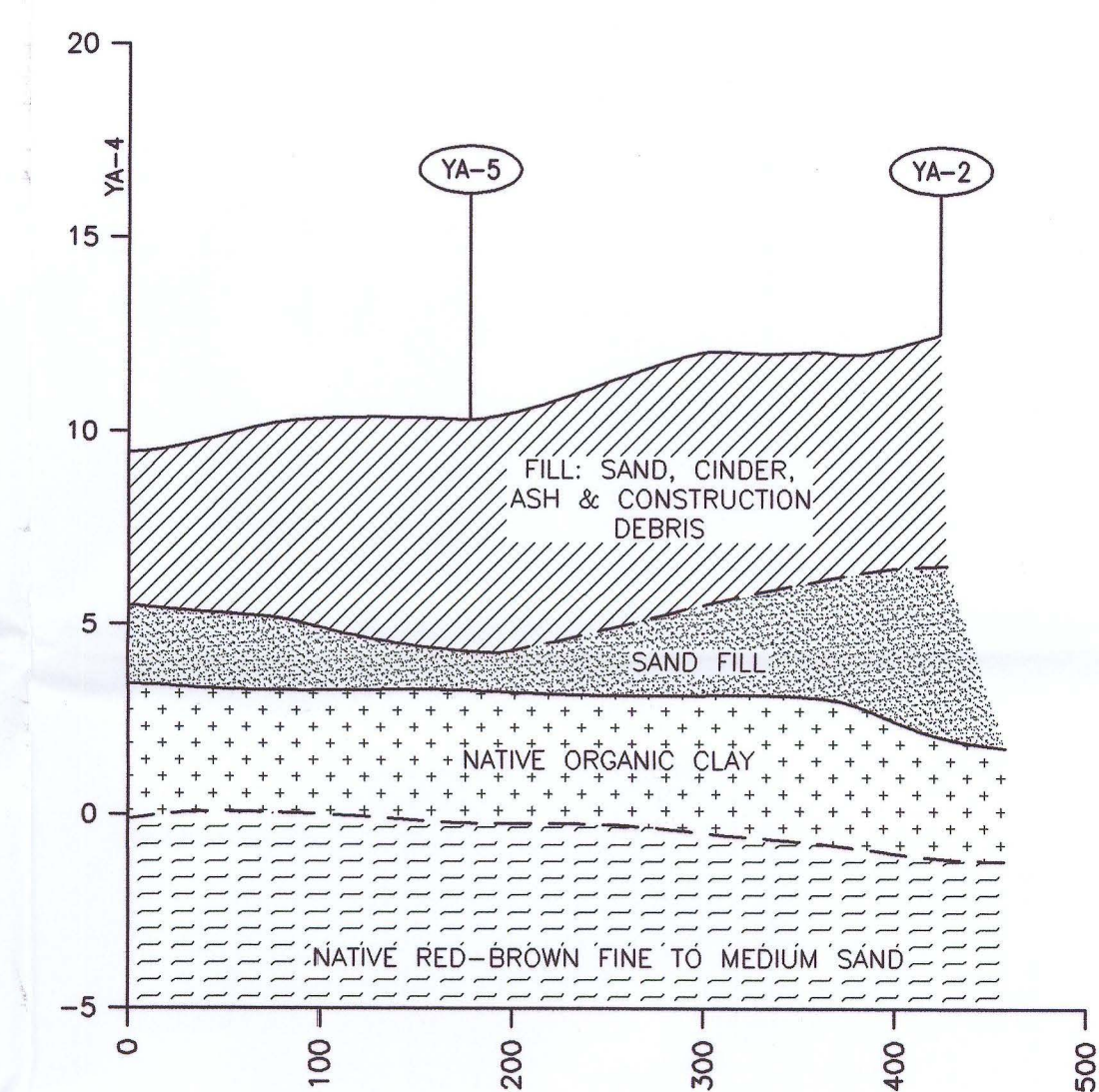
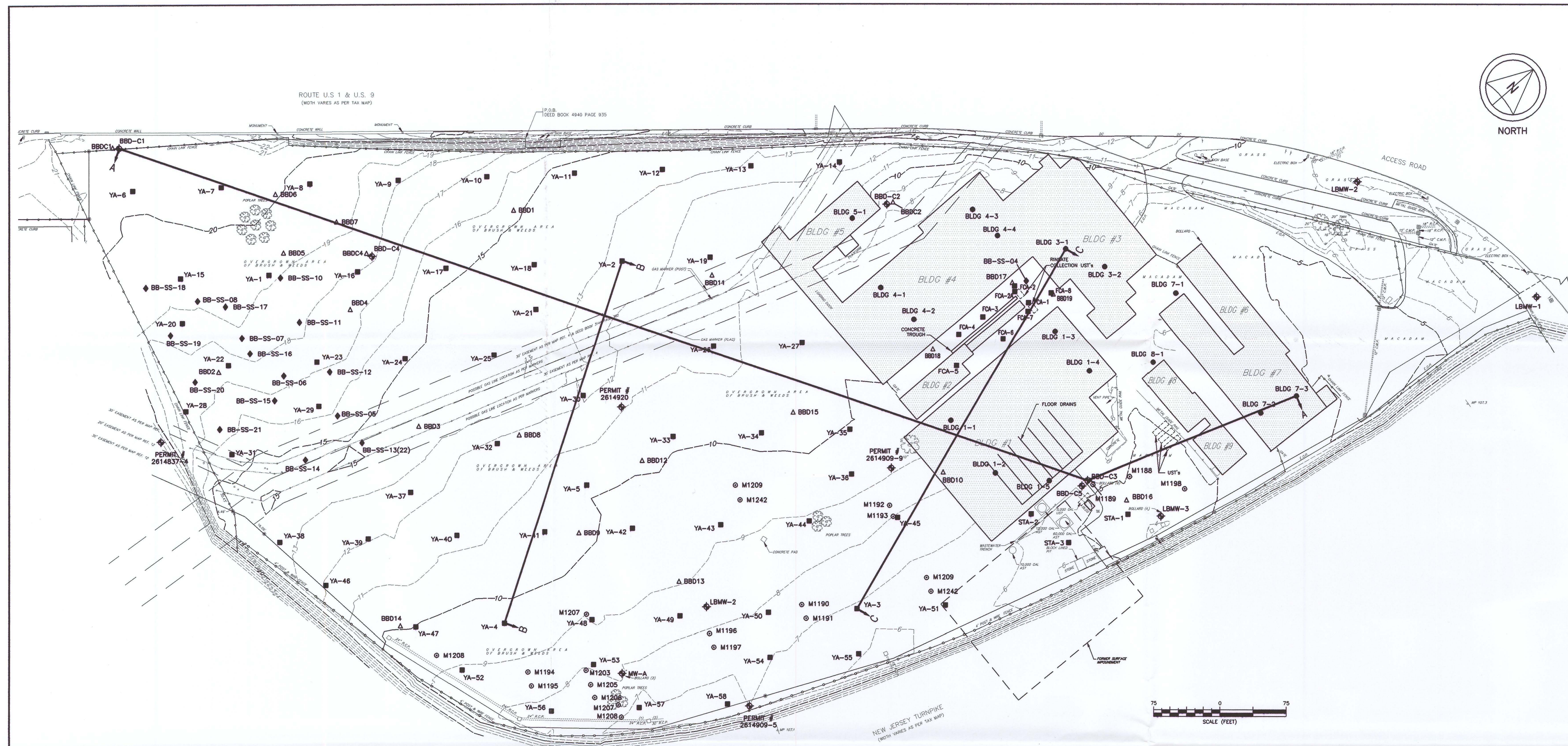


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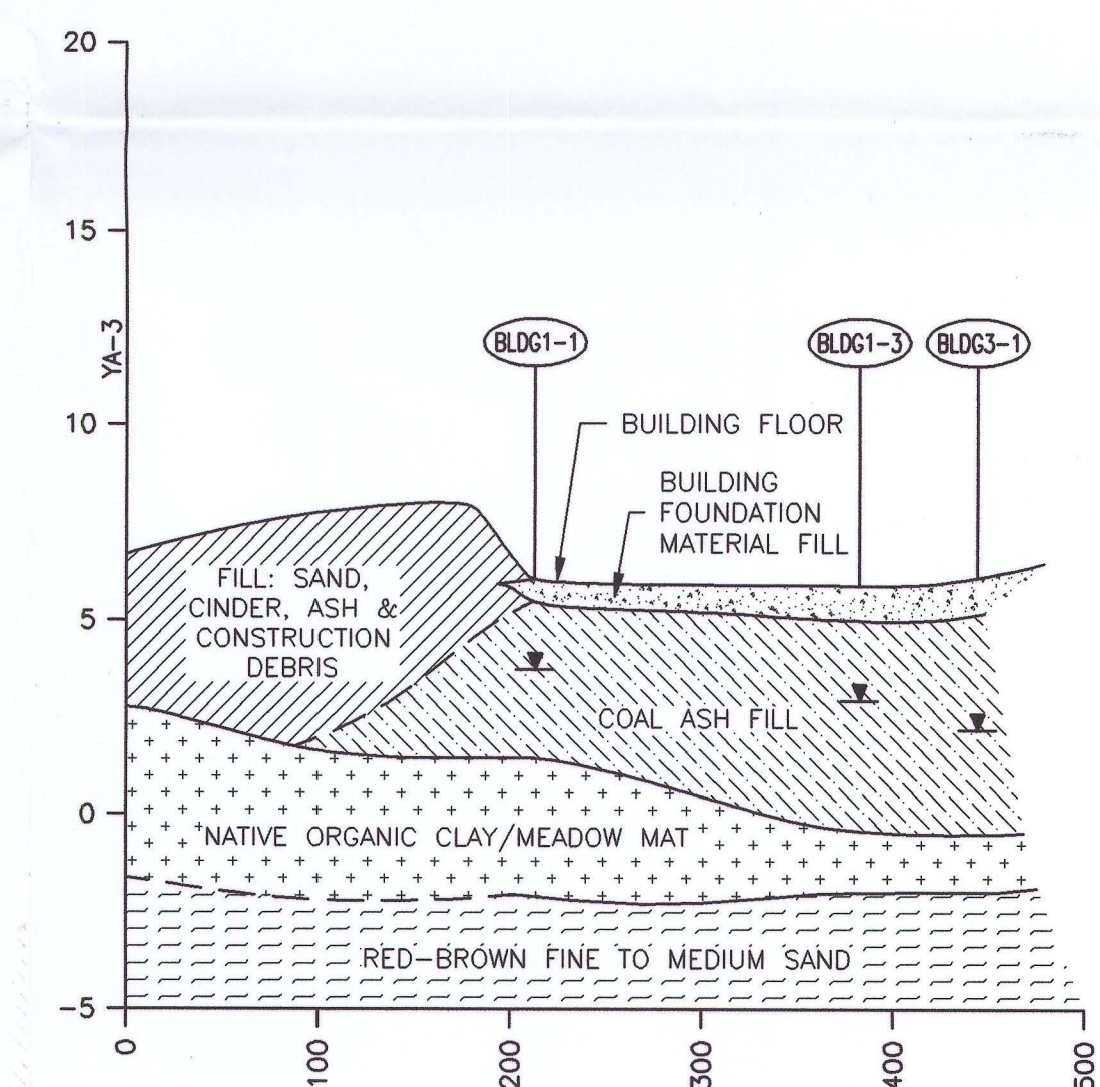
FIGURE 14
GENERAL FILL AREAS

PREPARED FOR:
BAYONNE BARREL & DRUM SITE
NEWARK, NEW JERSEY

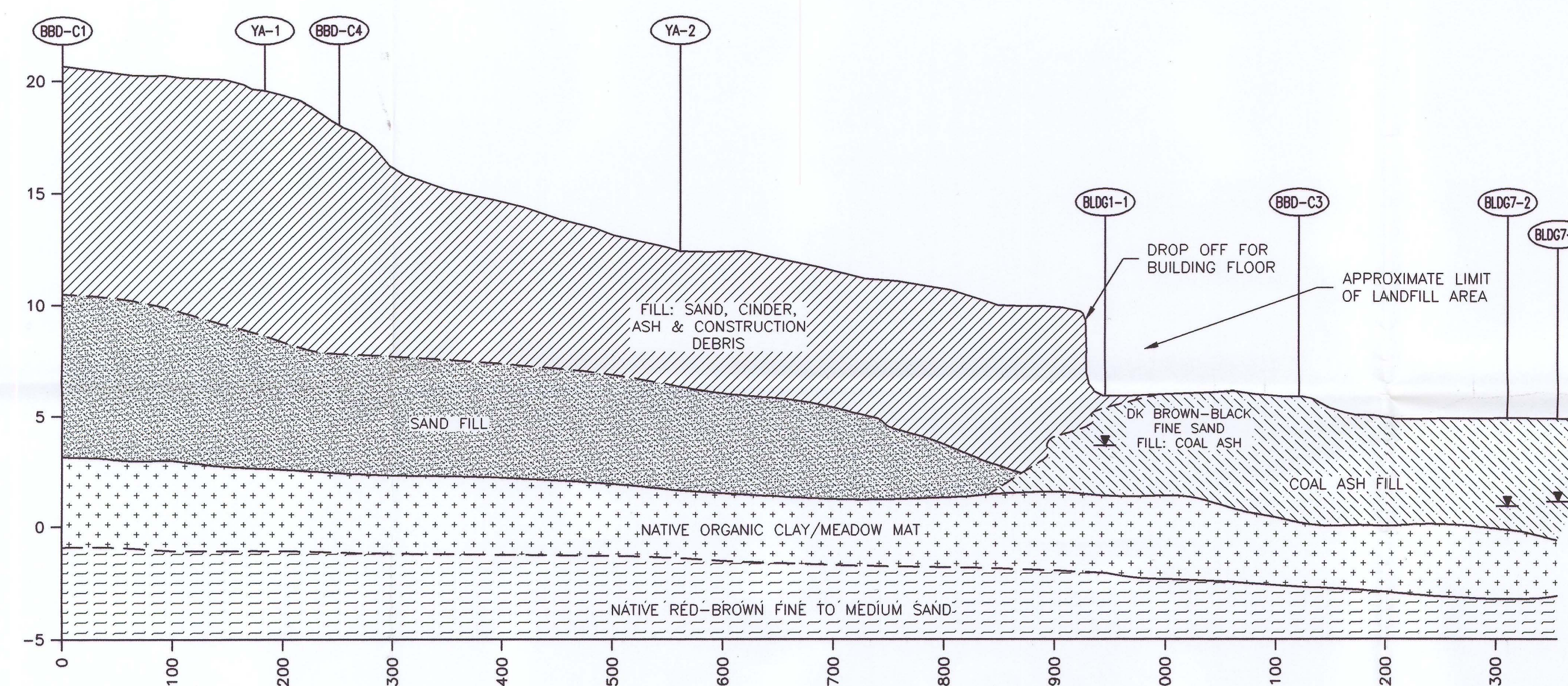
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12/18/02	ENG.	CAD FILE NO. BBD-021		0
	APPVD.	SHEET NO. 1 OF 1		



CROSS-SECTION B-B
HORIZONTAL SCALE 1" = 100'
VERTICAL SCALE 1" = 5'



CROSS-SECTION C-C
HORIZONTAL SCALE 1" = 100'
VERTICAL SCALE 1" = 5'



CROSS-SECTION A-A
HORIZONTAL SCALE 1" = 100'
VERTICAL SCALE 1" = 5'

LEGEND

- BUILDING FOUNDATION MATERIAL FILL
- FILL: SAND, CINDER, ASH & CONSTRUCTION DEBRIS
- COAL ASH FILL
- SAND FILL (PREDOMINANTLY) WITH LESS ASH AND CONSTRUCTION DEBRIS
- NATIVE ORGANIC CLAY
- NATIVE RED-BROWN FINE TO MEDIUM SAND

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FIGURE 15 CROSS-SECTIONS

BAYONNE BARREL & DRUM SITE
NEWARK, NEW JERSEY

PROJECT NO.	CHK'D: DB	SCALE: 1" = 100'	DRAWING NO.	REV. NO.
	ENG.	CAD FILE NO. BBD-018		
	APP'D.	SHEET NO. 1 OF 1		0

Appendix A
Soil Boring Descriptions

1741 Route 31, Clinton, NJ 08809

BORING LOG

Boring No.
BLDG 1-1

Sheet 1 of 1

Project: Bayonne Barrel and Drum

Date: 7/22/02

Location/AOC:

Weather: Sunny, ~ 85°

Personnel: Dan Beder

Driller: S & S Subsurface Investigations - Art Salvatore

Drilling Method: Geoprobe 66-DT

Sample Method: 5-ft length DT Core

Water Level:



entrance

inches driven	inches recvd	Depth in feet	PID (ppm)	Soil Code	Surface Conditions: Concrete (0.5')
60"	48"	1	0		Dark brown-black fine SAND, trace silt and small gravel (0.5')
		2	0		FILL - Coal ash - black & brown (3.0')
		3	0		Same, wet at ~ 27". Collect sample BLDG1-1A
		4	2		
		5	3		
60"	60"	6	1		Black silty CLAY (0.5')
		7	0		Same, petroleum odor (1.5')
		8	0		Organic layer (meadow mat) (1.0')
		9	0		Black silty CLAY (0.5')
		10	0		Red brown fine to medium SAND, some organic material (2.0')
					End of boring

Soil Sample Depth/Time

BLDG 1-1A VOC 18-24", 0-24"/1035

Remarks:

Wet @ 27"

Depth of fill = 4.5'

BORING LOG

Boring No.
BLDG 1-2

Sheet 1 of 1

Project: Bayonne Barrel and Drum

Date: 7/22/02

Location/AOC:

Weather: Sunny, ~ 85°

Personnel: Dan Beder


Driller: S & S Subsurface Investigations - Art Salvatore

Drilling Method: Geoprobe 66-DT

Sample Method: 5-ft length DT Core

Water Level:

in drain
●

inches driven	inches recvd	Depth in feet	PID (ppm)	Soil Code	Surface Conditions: Concrete drain (0.5')
60"	30"	1	0		 ~ 1.0'
		2	75		Grey fine to medium SAND (0.5')
		3	0		FILL - Black coal ash and cinders (1.0')
		4	0		Black silty-CLAY (0.5')
		5	0		Collect Sample BLDG 1-2A
		6	1		Same
		7	2		Brown silty CLAY, wet (0.5')
60"	48"	8	1		Brown silty CLAY with black mottles (0.5')
		9	1		Black silty CLAY (1.5')
		10	0		Brown fine to medium SAND and organic material (1.5')
					Red-brown fine to medium SAND, some organic material (roots, etc.) (0.5')
					End of boring

Soil Sample Depth/Time

BLDG 1-2A VOC 18-24", 0-24"/1110

Remarks:

Wet @ 42"

Depth of fill = 1.5'

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1741 Route 31, Clinton, NJ 08809

BORING LOG

Boring No.
BLDG 1-3

Sheet 1 of 1

Project: Bayonne Barrel and Drum

Date: 7/22/02

Location/AOC:

Weather: Sunny, 80°s

Personnel: Dan Beder

Driller: S & S Subsurface Investigations - Art Salvatore

Drilling Method: Geoprobe 66-DT

Sample Method: 5-ft length DT Core

Water Level:



inches driven	inches recvd	Depth in feet	PID (ppm)	Soil Code	Surface Conditions: Concrete (1.0')
60"	30"	1	0		FILL - Grey medium to coarse SAND, some silt and small gravel (1.0').
		2	0		FILL - Black coal ash and cinders (1.5')
		3	1		Collect Sample BLDG 1-3A
		4	1		Same, wet.
		5	0		
60"	24"	6	0		Same as above (0.5')
		7	0		Black & brown SILTY CLAY and ORGANIC MATERIAL (1.0')
		8	0		
		9	0		
		10	0		Red brown fine to medium SAND, some silt, trace organic material (0.5')
					End of boring

Soil Sample Depth/Time

BLDG 1-3A VOC 18-24", 0-24"/1235

Remarks:

Wet @ 30"

Depth of fill = 5.5'

BORING LOG

Water Level:

in drain

↓ ~ 1.0'

End of boring

BLDG 1-5A VOC 18-24", 0-24"/1500

1741 Route 31, Clinton, NJ 08809

Boring No.
BLDG 3-1

Project: Bayonne Barrel and Drum

Weather: Sunny, hot, humid

Driller: S & S Subsurface Investigations - Pete Dudley

Drilling Method: Geoprobe 66-DT

Sample Method: 5-ft length DT Core

Water Level:

Location/AOC:

BLDG 3-1

Soil Sample Depth/Time	Remarks:
BLDG 3-1A VOC 18-24", 0-24"/1045	Wet @ 48" Depth of fill = 5.5'

1741 Route 31, Clinton, NJ 08809

BORING LOG

Boring No.
BLDG 3-2.

Sheet 1 of 1

Project: Bayonne Barrel and Drum

Date: 7/23/02

Location/AOC:

Weather: Sunny

Personnel: Dan Beder

Driller: S & S Subsurface Investigations - Pete Dudley

Drilling Method: Geoprobe 66-DT

Sample Method: 5-ft length DT Core

Water Level:

inches driven	inches recvd	Depth in feet	PID (ppm)	Soil Code	Surface Conditions: Concrete (0.5')
60"	42"	1	0		FILL - Grey-brown fine to very fine SAND (0.5')
		2	0		Concrete, small gravel (0.5')
		3	0		FILL - Coal ash, cinders (1.0')
		4	0		Collect Sample BLDG3-2A.
		5	0		Broken red brick (0.5')
		6	0		Wet 1.0' from bottom
		7	0		FILL - coal ash and cinders (1.0')
60"	54"	8	0		Black coal ash, cinders (0.5')
		9	0		Dark brown silty CLAY (0.5')
		10	0		Dark brown MEADOW MAT, some silt and clay (1.0')
		11	0		Light brown MEADOW MAT (0.5')
		12	0		Red brown fine to medium SAND, some organic material, trace silt, bottom (2.0')
		13	0		
		14	0		End of boring
		15	0		
		16	0		
		17	0		
		18	0		
		19	0		
		20	0		
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BORING LOG

Boring No.
BLDG 4-1

Sheet 1 of 1

Project: Bayonne Barrel and Drum

Date: 7/23/02

Location/AOC:

Weather: Hot, Sunny, 90°s

Personnel: Dan Beder

Driller: S & S Subsurface Investigations - Pete Dudley

Drilling Method: Geoprobe 66-DT

Sample Method: 5-ft length DT Core

Water Level:

inches driven	inches recvd	Depth in feet	PID (ppm)	Soil Code
---------------	--------------	---------------	-----------	-----------

Surface Conditions: Concrete (0.5')

60"	30"	1	0	
		2	0	
		3	0	
		4	0	
		5	0	

FILL - Black and brown cinders, ash, large slag fragments (1.5')

MEADOW MAT (0.5')

FILL - Cinders, slag fragments (0.5')

Collect BLDG 4-1A

Same, wet.

White glass in tip (wet, bottom 3")

60"	36"	6	0	
		7	0	
		8	0	
		9	0	
		10	0	

Grey-black silty clay (soft), some organic material (7")

Red-brown fine to medium SAND, small to large rounded gravel (2'5")

End of boring

Soil Sample Depth/Time

BLDG4-1A VOC 18-24", 0-24"/1355

Remarks:

Wet @ 57"

Depth of fill = 5.0'

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BORING LOG

Boring No.
BLDG 4-2

Sheet 1 of 1

Project: Bayonne Barrel and Drum

Date: 7/23/02

Location/AOC:

Weather: Hot, Sunny, 90's

Personnel: Dan Beder

Driller: S & S Subsurface Investigations - Pete Dudley

Drilling Method: Geoprobe 66-DT

Sample Method: 5-ft length DT Core

Water Level:

inches driven	inches recvd	Depth in feet	PID (ppm)	Soil Code
---------------	--------------	---------------	-----------	-----------

Surface Conditions: Concrete (0.5')

60"	36"	1	0	FILL - Brown & black ash, cinders, some coal and brick chips, trace glass and fine to medium sand (1.5')
-----	-----	---	---	--

Collect Sample BLDG 4-4A

FILL - Red, brown, and black cinders and ash (1.5')

Wet at tip

2" same as above

Brown-black silty CLAY, some organic material (2.0')

Red brown fine to medium SAND, some organic material (1.0')

Red-brown fine to medium SAND, some medium rounded gravel and silt (1.0')

End of boring

Soil Sample Depth/Time

BLDG4-2A VOC 18-24", 0-24"/1230

Remarks:

Wet @ 5.0'

Depth of fill = 5.5'

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BORING LOG

Boring No.
BLDG 4-3

Sheet 1 of 1

Project: Bayonne Barrel and Drum

Date: 7/23/02

Location/AOC:

Weather: Sunny, 90°s

Personnel: Dan Beder

Driller: S & S Subsurface Investigations - Pete Dudley

Drilling Method: Geoprobe 66-DT

Sample Method: 5-ft length DT Core

Water Level:



inches driven	inches recvd	Depth in feet	PID (ppm)	Soil Description
60"	44"	1	0	Surface Conditions: Concrete (0.5')
		2	0	RL - Black-brown ash and cinders, some coal, glass, slag & wood fragments (2.5')
		3	0	Collect Sample BLDG 4-3A
		4	0	RL - Brown: fine to medium SAND and SILT (0.5')
		5	0	RL - Black cinders, coal fragments. (8.0')
				Same, bottom 0.5' wet
60"	5"	6		Same as above (1.5')
		7		Brown-black silty CLAY and organic material (0.5')
		8		Red brown fine to medium SAND, some silt and clay (2.5')
		9		
		10		
				End of boring

Soil Sample Depth/Time

BLDG4-3A VOC 18-24", 8/24/1310

Remarks:

Wet @ 4.5'

Depth of fill = 6.5'

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BORING LOG

Boring No.
BLDG 4-4

Sheet 1 of 1

Project: Bayonne Barrel and Drum

Date: 7/23/02

Location/AOC:

Weather: Sunny, hot, humid

Personnel: Dan Beder

Driller: S & S Subsurface Investigations - Pete Dudley

Drilling Method: Geoprobe 66-DT

Sample Method: 5-ft length DT Core

Water Level:

inches driven	inches recvd	Depth in feet	PID (ppm)	Soil Code	Surface Conditions: Concrete (0.5')
60"	36"	1	0		FILL - Black and grey brown coal, ash and cinders, trace glass & red brick (2.5')
		2	0		
		3	0		Collect Sample BLDG 4-4A
		4	0		FILL - Red brown fine to medium SAND, trace silt (0.5')
		5	0		Black in tip. Wet, bottom 1.0'
60"	44"	6	0		Black coal and coal ash and cinders (1.0')
		7	0		Black silty CLAY, some organic (4.0")
		8	0		Meadow mat, brown-black (8")
		9	0		Red-brown fine to medium SAND, some silt, trace roots (1.0')
		10	0		Black fine to medium SAND, some coarse sand, trace rounded medium gravel. (8.0")
					End of boring

Soil Sample Depth/Time

BLDG4-4A VOC 18-24", 0-24"/1155

Remarks:

Wet @ 4.0'

Depth of fill = 6.5'

Quest Environmental & Engineering Services, Inc.
1741 Route 31, Clinton, NJ 08809

BORING LOG

Boring No.
BLDG 5-1

Sheet 1 of 1

Project: Bayonne Barrel and Drum

Date: 7/23/02

Location/AOC:



Weather: Sunny, 90°s

Personnel: Dan Beder

Driller: S & S Subsurface Investigations - Pete Dudley

Drilling Method: Geoprobe 66-DT

Sample Method: 5-ft length DT Core

Water Level:

inches driven	inches recvd	Depth in feet	PID (ppm)	Soil Code	Surface Conditions: Concrete (0.5')
60"	36"	1	0		FILL - Brown fine SAND, trace glass fragments (1.0')
		2	5.0		FILL - Black brown very fine SAND, some silt (0.5')
		3	0		Collect Sample BLDG 5-1A
		4	0		
		5	0		FILL - Black very fine SAND, some silt/trace small rounded gravel (1.5')
60"	36"	6	0		FILL - Black coal cinders, ash (0.5') (FILL)
		7	0		FILL - Brown-grey ash, cinders (1.5'). Wet in grey.
		8	0		Wet 2' from bottom
		9	0		Collect Sample BLDG 5-1B
		10	0		FILL - Broken brick, ashes & cinders (0.5')
		11	0		FILL - Bottom 0.5' silty CLAY, some cinders
		12	1		Black-brown silty CLAY, some organic material (0.5')
		13	1		Red brown fine to medium SAND, some larger and small rounded gravel (3.0')
5'	3.5'	14	1		
		15	1		
					Same
					End of Boring

Soil Sample Depth/Time

BLDG5-1A VOC 18-24", 0-24"/1440

BLDG5-1B VOC 7.5-8', 6-8'/1500

Remarks:

Wet @ 8'

Depth of fill = 10'

1741 Route 31, Clinton, NJ 08809

Boring No.
BLDG 7-1

Project: Bayonne Barrel and Drum

Location/AOC:

Personnel: Dan Beder

Driller: S & S Subsurface Investigations - Pete Dudley

Drilling Method: Geoprobe 66-DT

Sample Method: 5-ft length DT Core

Water Level:

Soil Sample Depth/Time

BLDG7-1A VOC 18-24", 0-24"/1530

Remarks:

Wet @ 46"

Depth of fill = 5.0'

1741 Route 31, Clinton, NJ 08809

BORING LOG

Boring No.
BLDG 7-3

Sheet 1 of 1

Project: Bayonne Barrel and Drum

Date: 7/24/02

Weather: Cloudy

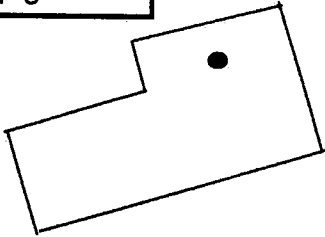
Personnel: Dan Beder

Driller: S & S Subsurface Investigations - Pete Dudley

Drilling Method: Geoprobe 66-DT

Sample Method: 5-ft length DT Core

Water Level:

Location/AOC:[illegible]

Soil Sample Depth/Time

BLDG7-3A VOC 18-24", 0-24"/0910

Remarks:

Wet @ 44"

Depth of fill = 5.5'

Quest Environmental & Engineering Services, Inc.

1741 Route 31, Clinton, NJ 08809

BORING LOG

Boring No.
BLDG 8-1

Sheet 1 of 1

Project: Bayonne Barrel and Drum

Date: 7/24/02

Location/AOC:

Weather: Cloudy, ~ 70°, windy

Personnel: Dan Beder

Driller: S & S Subsurface Investigations - Pete Dudley

Drilling Method: Geoprobe 66-DT

Sample Method: Macrocore

Water Level:

inches driven	inches recvd	Depth in feet	PID (ppm)	Soil Code
60"	42"	1	0	
		2	0	
		3	4	
		4	0	
		5	0	
60"	54"	6	0	
		7	0	
		8	0	
		9	0	
		10	0	

Surface Conditions: Asphalt (4")

Brown fine to medium SAND, some small gravel (0.25')

FILL - Black, brown, and grey cinders, ash, coal, slag, same to 5'

Collect Sample BLDG 8-1A

Wet 14" from bottom

Same as above, wet (0.5')

Dark grey silty CLAY, some organic material (0.5')

Meadow mat (organic) (2.0')

Red brown fine to medium SAND, some roots (0-5')

Red brown fine to medium SAND, trace roots 1.0' to bottom

End of boring

Soil Sample Depth/Time

BLDG8-1A VOC 18-24", 0-24"/0830

Remarks:

Wet @ 46"

Depth of fill = 5.5'

Attachment 1
Summary of Sample Descriptions and Field Observations
Soil Samples
Bayonne Barrel and Drum Site
Newark, New Jersey

Sample #	Sample Depth (feet bgs)	PID (ppm)	Sample Description
Furnace Courtyard Area			
FCA-1	0-2	100	No sample description listed in field notes
FCA-2	0-2	250	Dark brown to black silt (0-1.8); Black fine to medium sandy cinders, organic odor (1.8-2.0)
	2-4	50	Wet, brown, fine to coarse sand, some small pieces of brick and cement
	4-6	20	Wet, brown, fine to coarse sand, some small pieces of brick and cement
FCA-2A	0-2	200	Moist, gray-brown silt and fine sand with gray, pink, blue, red, and purple material
	2-4	220	Wet, black, red, pink, and white gummy sludge material
FCA-3	0-2	30	Dark brown to black silt and fine to coarse sand and gravel with fill debris (brick and cement)
	2-4	150	Dark brown to black silt and fine to coarse sand (2-3); Wet, black, fine to coarse sand, gravel, bricks, wood, and cement
FCA-4	0-2	20	Dark brown to black, fine to coarse sand, gravel, and cinders
	2-4	80	Dark brown and gray silt and fine to coarse sand (2-3); Wet gray silt and fine to coarse sand (3-4)
	4-6	5.0	Wet, dark brown to black, fine to coarse sand and gravel
FCA-5	0-1.5	260	Black, gummy sludge material inside FCA building pit
FCA-6	0-2	20	Dark gray to black silt and fine to medium sand
	2-4	5.0	Wet, dark brown silt with fine to coarse sand and gravel
FCA-7	0-2	300	Dark brown to black silt and fine to coarse sand and gravel
	2-4	200	Black, yellow, pink, and purple gummy sludge material
FCA-8	0-2	80	Dark brown silt and fine to coarse sand with gravel
	2-4	120	Moist, black, fine to coarse sand
	4-6	4.0	Wet, black, fine to coarse sand and gravel

Attachment 1 (cont.)
 Summary of Sample Descriptions and Field Observations
 Soil Samples
 Bayonne Barrel and Drum Site
 Newark, New Jersey

Sample #	Sample Depth (feet bgs)	PID (ppm)	Sample Description
Storage Tank Area			
STA-1	0-2	25	Dark brown and black, fine to coarse sand and gravel
	2-4	60	Wet, brown and black, fine to coarse sand with some clay; strong petro odor
STA-2	0-2	120	Brown and black stained fine sand
	2-4	10.0	Dark brown and black, fine to coarse sand with some wet clay
	4-6	15.0	Black, stained, brown clay with some wet, fine to coarse sand
STA-3	0-2	70	Dark brown and black fine to coarse sand
	2-4	100	Dark brown to black fine to coarse sand (2-3); Wet, dark brown to black, clay with some fine to coarse sand, strong petro odor (3-4)

Attachment 1 (cont.)
Summary of Sample Descriptions and Field Observations
Soil Samples
Bayonne Barrel and Drum Site
Newark, New Jersey

Sample #	Sample Depth (feet bgs)	PID (ppm)	Sample Description
Yard Area Soil Boring Samples			
YA-1	0-2	1.2	Brown silt and fine to coarse sand with fill debris (glass, cement, gravel, yellow-green fine material)
	2-4	3.6	Brown to red, brown, black stained, silt and fine to coarse sand with fill debris
	4-6	4.0	Brown to red, brown, black stained, silt and fine to coarse sand with fill debris
	6-8	2.8	Brown to red, brown, black stained, silt and fine to coarse sand with fill debris
	8-10	3.0	Brown to red, brown, black stained, silt and fine to coarse sand with fill debris
	10-12	3.2	Brown, fine sand with black silt
	12-14	0.8	Brown, fine sand
	14-16	1.2	Brown, fine sand with glass
	16-18	0.8	Wet, brown to black, fine sand with some gray sandy clay
YA-2	0-2	1.6	Brown, orange-brown, fine sand with fill debris (cinders, brick, metal pieces, and gravel), and black staining
	2-4	0.2	Brown, orange-brown, fine sand with fill debris (cinders, brick, metal pieces, and gravel), and black staining
	4-6	0.2	Brown, orange-brown, fine sand with fill debris (cinders, brick, metal pieces, and gravel), and black staining
	6-8	0.4	Brown, fine sand
	8-10	0.6	Moist, brown, fine sand
	10-12	1.0	Wet, brown, fine sand with black staining
YA-3	0-2	10.2	Black stained, brown, fine to coarse sand with fill debris (bricks, gravel, concrete, glass, cinders, and ash)
	2-4	6.8	Black stained, brown, fine to coarse sand and silt with odor
	4-6	2.8	Black stained, brown clay with odor
	6-8	1.8	Wet, black stained, brown clay with odor
YA-4	0-2	0.1	Brown and tan, fine sand with fill debris (glass, metal pieces, brick, and cement) with some black staining
	2-4	0.8	Brown and tan, fine sand with fill debris (glass, metal pieces, brick, and cement) with more black staining
	4-6	18.0	Brown, fine to coarse sand, sand and silt, black staining; strong petro odor
	6-8	16.0	Black stained, brown clay with some fine to coarse sand; strong petro odor
	8-10	10.0	Wet, black stained, brown clay
YA-5	0-2	3.6	Brown, fine to coarse sand with fill debris (cinders, ash, brick, glass, cement, and metal pieces)
	2-4	3.6	Brown, fine to coarse sand with fill debris (cinders, ash, brick, glass, cement, and metal pieces); some black staining
	4-6	2.4	Brown, fine to coarse sand with fill debris (cinders, ash, brick, glass, cement, and metal pieces); more black staining
	6-8	1.8	Black silt with fine to coarse sand and ash; black staining and strong odor
	8-10	0.8	Wet, black silt with fine to coarse sand

Attachment 1 (cont.)
Summary of Sample Descriptions and Field Observations
Soil Samples
Bayonne Barrel and Drum Site
Newark, New Jersey

Sample #	Sample Depth (feet bgs)	PID (ppm)	Sample Description
Yard Area Surface Soil Samples			
YA-6	0-2	0.2	Brown, fine to coarse sand and silt with fill debris (glass, cinders, ash, wood, and bricks)
YA-7	0-2	130	Brown, fine to medium sand with silt and glass; strong odor
YA-8	0-2	2.4	Light brown, fine to medium sand with organic matter (roots and leaves) and fill debris (brick and cinders)
YA-9	0-2	0.1	Brown, fine sand with silt and debris (brick and cinders); slight odor
YA-10	0-2	4.0	Brown, fine sand and silt; black sludge material (petro odor) with fill debris (bricks, glass, metal, and cement)
YA-11	0-2	0.0	Black and brown, fine to medium sand with silt and glass
YA-12	0-2	0.2	Brown, fine sand and silt
YA-13	0-2	2.0	Brown, fine to coarse sand and silt with fill debris (glass, metal, and bricks)
YA-14	0-2	1.6	Fine to medium sand with silt, some organic matter (wood and leaves), and brick
YA-15	0-2	0.2	Brown, fine to medium sand and silt with much fill debris (glass, brick, cement, metal, and some black sludge material (no odor))
YA-16	0-2	2.0	Brown, coarse sand with glass
YA-17	0-2	0.1	Black, coarse sand and fine gravel with ash
YA-18	0-2	0.1	Brown and black, fine to coarse sand with debris (glass, rubber, and a piece of plastic, black clay)
YA-19	0-2	0.0	Black and brown, fine to coarse sand with glass
YA-20	0-2	0.0	Brown to black, medium to coarse sand with cinders
YA-21	0-2	0.8	Brown, fine to coarse sand and gravel; white, coarse, wet, ash material with debris (glass, cement, and bricks)
YA-22	0-2	0.4	Brown, medium to coarse sand with some gravel and glass
YA-23	0-2	1.2	Brown, fine to medium sand with silt and debris (glass, bricks, and concrete)
YA-24	0-2	0.6	Brown to black, medium to coarse sand with cinders; slight odor
YA-25	0-2	1.0	Brown to black, fine to coarse sand with cinder, ash, and some silt
YA-26	0-2	0.0	Brown and black, coarse sand with some gravel
YA-27	0-2	28	Dark brown to black, fine to coarse sand with cinders, ash, and some gravel
YA-28	0-2	0.4	Brown, fine to medium sand with silt and fill debris (brick and glass)
YA-29	0-2	20	Brown, fine to coarse sand with silt and fill debris (bricks and concrete)
YA-30	0-2	4.0	Red-brown clay and black silt with white ash and brick debris
YA-31	0-2	0.6	Brown, medium to coarse sand with fill debris (glass, brick, concrete, and cinders)
YA-32	0-2	0.0	Brown, fine to coarse sand with silt and fill debris (brick and cinders)
YA-33	0-2	0.5	Black and brown, fine sand and brown clay
YA-34	0-2	0.0	Brown to black, fine to coarse sand with debris (glass, brick, and cinders)
YA-35	0-2	1.0	Dark brown, fine to coarse sand with some silt and debris (brick, asphalt, glass, cinders, and ash)
YA-36	0-2	0.6	Dark brown, fine to coarse sand with some silt and debris (cinders, asphalt, and brick)

Attachment 1 (cont.)
Summary of Sample Descriptions and Field Observations
Soil Samples
Bayonne Barrel and Drum Site
Newark, New Jersey

Sample #	Sample Depth (feet bgs)	PID (ppm)	Sample Description
Yard Area Surface Soil Samples (continued)			
YA-37	0-2	2.8	Brown, medium to coarse sand with fill debris (brick and glass)
YA-38	0-2	8.6	Brown to black, medium to coarse sand and silt with cinders
YA-39	0-2	14.8	Brown, fine sand with silt and brick
YA-40	0-2	22	Brown, fine sand and silt with packed cinders, ash, and glass
YA-41	0-2	54	Black and brown, medium to coarse sand with glass and nails
YA-42	0-2	7.0	Black and brown, medium to coarse sand and silt with glass
YA-43	0-2	65	Black to brown, fine to coarse sand with fill debris (wood and rubber pieces)
YA-44	0-2	0.0	Brown, fine to medium sand with silt and fill debris (glass, brick, ash, and cinders)
YA-45	0-2	0.1	Brown, fine to medium sand with silt and fill debris (cinders, ash, glass, and plastic)
YA-46	0-2	1.6	Black and gray hard packed gravel (0-1); tan fine sand (1-2)
YA-47	0-2	0.1	Red-brown silt and fine sand (0-1); tan and light brown fine sand (1-2)
YA-48	0-2	15.4	Brown to black, medium to coarse sand with debris (cinders, brick, tile, glass, wood, and plastic)
YA-49	0-2	3.0	Brown, fine to coarse sand with silt and much fill debris (brick, cinders, and concrete)
YA-50	0-2	84	Brown to black, medium to coarse sand with silt and fill debris (glass, cinders, and brick); slight to moderate odor
YA-51	0-2	12.4	Brown to black, medium to coarse sand with silt and gravel; slight to moderate odor
YA-52	0-2	0.0	Brown, fine sand with silt
YA-53	0-2	210	Black, coarse to fine sand with debris (glass and plastic)
YA-54	0-2	300	Black silt and fine sand with cinders, gravel, plastic, wood, and paper; noticable odor
YA-55	0-2	22	Black, sand and silt with cinders, gravel, brick, glass, and wood; slight odor
YA-56	0-2	0.2	Brown list (0-0.3); tan, fine sand (0.3-2.0)
YA-57	0-2	0.1	Brown silt (0-0.5); Red-brown silt (0.5-1.5); Gray, fine sand (1.5-2)
YA-58	0-2	26	Brown, fine to medium sand with silt and gravel

Table 1

SOIL BORING DESCRIPTIONS

A. Discrete Soil Samples

<u>Boring #</u>	<u>Depth (Inches)</u>	<u>Soil Description</u>
M1188	0-8	Black muck, some gravel; oily odor
M1189	0-18	Brown silt and gravel
M1190	2- 8	Dark brown silty sand; friable
	8-13	Dense silty sand, trace glass
	13-18	Dark black sandy silt, some fill (plastic, china, whitish silica based material)
M1191	18-24	Brownish, black silty sand; some fill (asphalt glass, plastic, waste concretions)
	24-30	Same with trace plastic
	30-36	Fill (slag, glass, iron/sand concretions); distinct petroleum odor.
M1192	0-18	Dense black sand and fill (plastic, brick, slag)
M1193	18-24	Black silt; some fill (brick, glass, cardboard)
	24-36	Same with asphalt and wood; moist
M1194	0-7	Gravelly, f-m sand, trace glass
	7-12	F-m brown sand
	12-17	C gravel and c-m white sand; moist
	17-18	Orange-brown silty clay; trace organic smears
M1195	18-26	F-m brown silty sand
	26-29	Same, trace asphalt-like material
	29-33	Fill (greyish-black asphalt-like material and coarse fragments with trace black smears)
	33-36	Dense sand and gravel; some conglomerate, moist
M1196	0-7	Brownish black silty sand, some gravel, little asphalt
	7-14	Same with some asphalt
	14-18	Reddish brown silt and fill (brick conglomerate, trace asphalt)
M1197	18-25	Black sandy clay and fill (asphalt, brick)
	25-31	Fill (brick, coarse fragments (>1.5"), concretions, trace plastic)
	31-36	Brownish black silt, little black smears and weathered brick. Distinct petroleum odor.

Table 1 (continued)

<u>Boring #</u>	<u>Depth (Inches)</u>	<u>Soil Description</u>
B. <u>Composited Soil Samples</u>		
M1207 (6A)	0-4	Dark brown silty sand, some slatey coarse fragments, trace asphalt-like material
	4-8	Same, but more orange-colored sand with little coarse fragments and trace glass.
	8-14	Same, some whitish sand with little black streaks, trace glass
	14-18	C white sand and m-c brown sand, trace black smears, little cemented, rusted fill; moist
M1208	18-24	Gravelly m-c brown sand
	24-30	C white sand, some orange brands & trace pebbles
	30-36	Same, some coarse fragments, trace black streak
M1207 (6B)	0-4	Greyish brown silty sand, trace orange-green streaks
	4-10	Same, black with some fill (glass and wood)
	10-18	Fill (Asphalt-like matrix, some white specks and orange material, trace wood and glass)
No 18-36 inch sample taken for composite M1208 at 6B.		
M1207 (6C)	0-8	Brownish, black silty sand, some coarse frags.
	8-15	Same, some broken brick and asphalt-like material. Slight petroleum odor.
	15-18	Orange, brown silty sand and gleyed silty sand, trace brick and black streaks.
M1208	18-24	Black sandy loam; distinct oily texture and odor
	24-30	Dense sandy loam, some fill (brick, plastic): distinct petroleum odor.
	30-33	Sandy loam and fill (glass, wood, asphalt-like material, paint streaks); distinct oily odor
	33-36	Same, little plastic, some wood, distinct odor
M1209 (7A)	0-6	Sandy loam; little orange streaks, brick; weak petroleum odor.
	6-12	Dense sandy loam, trace white flakes & black laminates; strong petroleum odor.
	12-18	Fill (asphalt-like material, white flakes, green and red streaks, glass, sand concretions).
M1242	18-22	Black sand, some pebbles and fill (asphalt-like material, plastic, glass)
	22-30	Fill (glass, pebbles, wood fibers, green marl, brick
	30-36	Same, little dense red clay, petroleum-saturated

Table 1 (continued)

<u>Boring #</u>	<u>Depth (Inches)</u>	<u>Soil Description</u>
M1209 (7B)	0-4	Black sandy loam, trace small pebbles; friable
	4-8	Same, some fill (Slag, brick and glass)
	8-14	Same, little rainbow colored bands; moist
	14-18	Fill (asphalt-like material); trace oily odor.
	18-24	Fill (same, but little wood); slight oily odor
M1242	24-30	Fill (asphalt-like material, white coatings, spongy material, sand and other)
	30-36	Same, all black trace-white coatings. Weak oily odor.
M1209 (7C)	0-10	Black sandy silt and m-c gravel
	10-14	Fill (asphalt-like substrate, trace slag)
	14-18	Same, little orange coated slag; distinct petroleum odor.
M1242	18-24	Fill (wood fibers, asphalt-like material, glass, slag); moist; distinct petroleum odor.
	24-30	Same
	30-36	Same, some brick

Dan Raviv Associates, Inc. West Orange, N.J.						PROJECT NAME <i>Eyona Barrel</i>						TEST HOLE NUMBER <i>B80e5</i>					
DETAILED DRILL LOG						PROJECT/JOB NUMBER <i>84C132</i>						SHEET <i>1</i> of <i>1</i>					
DRILLING COMPANY <i>Jersey Boring and Drilling</i>						SITE						LOCATION					
NAME OF DRILLER <i>George Thompson</i>						LOGGED BY: <i>H Zuer</i>						CHECKED BY:					
DRILL MANUFACTURER AND MODEL NUMBER						DEPTH TO GROUNDWATER/DATE <i>5.70 ft 11/7/86</i>						ORIENTATION <i>Vertical</i>					
SIZE AND TYPE OF BIT (S)						TOTAL DEPTH OF HOLE <i>7'</i>						TOTAL CORE RECOVERY					
						DATE STARTED <i>12/17/85</i>						DATE COMPLETED <i>12/17/86</i>					
CLASSIFICATION OF MATERIALS (DESCRIPTION)																	
<div style="float: right; width: 10%;"><i>0-3"</i> <i>Road gravel and 1/2 silt</i> <i>0-7'</i> <i>Black silty fill must be wet,</i></div> <div style="clear: both;"></div> <div style="margin-top: 100px;"><i>Strong odor</i> <i>Drilled to seven ft</i> <i>0 - 1 ft 2 1/4 casing</i> <i>1 - 6 ft 2 1/4" φ steel screen</i></div>																	

Dan Raviv Associates, Inc. West Orange, N.J. DETAILED DRILL LOG	PROJECT NAME	TEST HOLE NUMBER
	<i>Bayonne Borehole + Pump</i> PROJECT/JOB NUMBER <i>84C152</i>	<i>B3DC3</i> SHEET <u>3</u> of <u> </u>

DRILLING COMPANY	SITE	LOCATION
<i>Bayonne Borehole + Pump</i> NAME OF DRILLER <i>George Thomas, Jr.</i>	LOGGED BY: <i>143</i>	CHECKED BY:
DRILL MANUFACTURER AND MODEL NUMBER	DEPTH TO GROUNDWATER/DATE	ORIENTATION
		<i>Vertical</i>

SIZE AND TYPE OF BIT (S)	TOTAL DEPTH OF HOLE	TOTAL CORE RECOVERY	DATE STARTED	DATE COMPLETED
<i>9" Rotary</i>	<i>53'</i>		<i>12/12/85</i>	<i>12/17/</i>

Time	Drilling & Logging	Remarks	Time	Drilling & Logging	Remarks	Time	Drilling & Logging	Remarks	Classification of Materials (Description)
------	--------------------	---------	------	--------------------	---------	------	--------------------	---------	---

5	SS								0-2.5'
	SS								fine stone gr. soil
	SS								2.5-5'
									Block sandy-gr. soil
10	SS								5-7'
									angular sandy type
									rock gravel fill
15									10-12'
									fluvial red-brown
									medium grained, well
									sorted sand
20									
25									
30									
35									
40									
45									
50									

water level at
 about 3'3" below
 surface (in boring)
 at this level
 material - probably
 due to weathering -
 is very loose and
 opposite to drop
 from walls of
 boring

This boring was
 sealed

[illegible]

Dan Raviv Associates, Inc. West Orange, N.J. DETAILED DRILL LOG		PROJECT NAME <i>Bayview Group 4-2-2000</i>		TEST HOLE NUMBER <i>BRK 2</i>	
		PROJECT/JOB NUMBER <i>87C33-</i>		SHEET <i>2</i> of <i>4</i>	
DRILLING COMPANY <i>T. J. Boring & Drilling Co.</i>		SITE		LOCATION <i>Marble, N.J.</i>	
NAME OF DRILLER <i>George Howard</i>		LOGGED BY: <i>PLB</i>	CHECKED BY:	ELEVATION	
DRILL MANUFACTURER AND MODEL NUMBER		DEPTH TO GROUNDWATER/DATE <i>4.35' 1/2/85</i>		ORIENTATION <i>Vertical</i>	
SIZE AND TYPE OF BIT (S) <i>10" O.D. Reamer - 5' - 6' - 8' - 10' - 12' - 14' - 16' - 18' - 20' - 22' - 24' - 26' - 28' - 30' - 32' - 34' - 36' - 38' - 40' - 42' - 44' - 46' - 48' - 50' - 52' - 54' - 56' - 58' - 60' - 62' - 64' - 66' - 68' - 70' - 72' - 74' - 76' - 78' - 80' - 82' - 84' - 86' - 88' - 90' - 92' - 94' - 96' - 98' - 100'</i>		TOTAL DEPTH OF HOLE <i>20'</i>	TOTAL CORE RECOVERY	DATE STARTED <i>12/3/85</i>	DATE COMPLETED <i>12/15/85</i>
Depth (ft.)	Drilling & Sampling	Recovery (%)	Core / 100	Remarks (Depth, Date, Location, etc.)	Depth (ft.)
0-5'	SS	C	0%	<i>WATER CONTAMINATED AT 1'</i> <i>FLUORIDE BORING FROM 2nd FLUORIDE WATER BORING UP DARK RED-BROWN, FINE-MEDIUM GRAIN SAND</i> <i>4-14' SANDWATER TD = 20' TC CORRECTION = 20'</i>	0-5'
5-10'	SS	1/3	15%		5-7'
10-12'	SS	1	5%		10-12'
12-20'					12-20'
					<i>0-5' WATER CONTAMINATED</i> <i>5-7' MISTY, DARK BROWN GRANULAR FILL</i> <i>10-12' BULK RED-BROWN, FINE TO MEDIUM GRAIN SAND WITH SOME CORNERS</i> <i>12-20' BULK RED-BROWN, FINE TO MEDIUM GRAIN SAND</i>

Appendix B

Data Summary Tables/Figures – Multiplex Theater Property

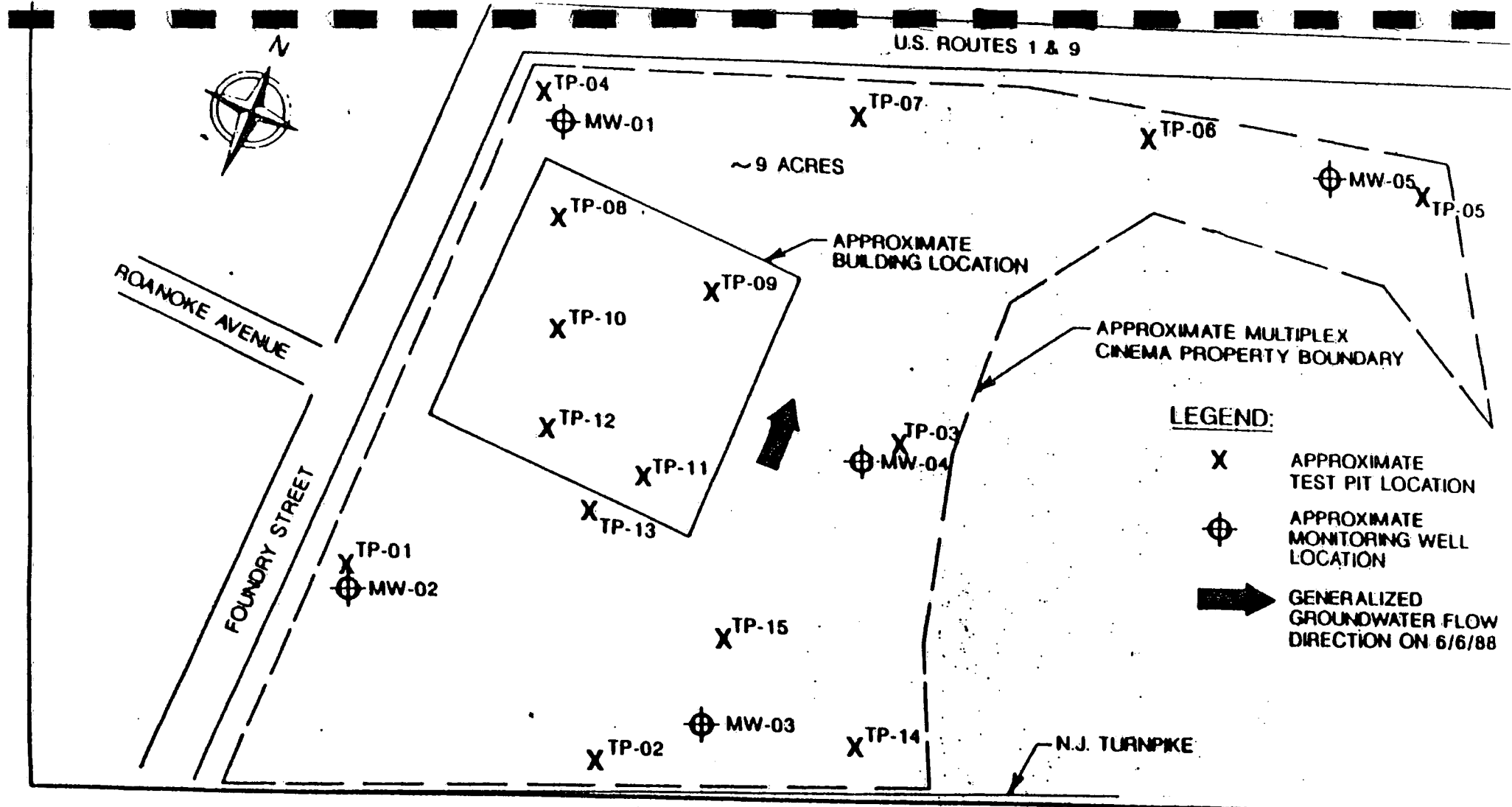


FIGURE 3

APPROXIMATE TEST PIT LOCATIONS

NATIONAL AMUSEMENTS, INC.

NOT TO SCALE

Table 5
NATIONAL AMUSEMENTS, INC.
VOLATILE ORGANIC COMPOUNDS DETECTED IN TEST PIT SAMPLES

Parameter (µg/kg)	Test Pit Samples							
	TP-01-DIS	TP-02-DIS	TP-02-DIS-RE	TP-02	TP-03	TP-04	TP-05-DIS	TP-07
Carbon Disulfide								
Ethyl Benzene				12			17 J	
Xylene (Total)				3 J			50	6 J
Benzene		8	27	2 J			26 J	11
Toluene	2 JB	8 B		3 JB			24 J	6 JB
Chlorobenzene								8

Notes:

- Blank = Compound not detected
- J = Estimated value, result below detection limit
- B = Compound also found in blank

Table 5
NATIONAL AMUSEMENTS, INC.
VOLATILE ORGANIC COMPOUNDS DETECTED IN TEST PIT SAMPLES

Parameter (µg/kg)	Test Pit Samples						
	TP-07-RE	TP-08	TP-08-RE	TP-09	TP-12	TP-13	TP-14-DIS
Carbon Disulfide				7			
Ethyl Benzene		520	370	14	130		110,000
Xylene (Total)		1,000	760	27	210		220,000 B
Benzene	8J	89	52	9 J	28 J		16,000
Toluene	7 J	160 B	110	5 JB	35 B		67,000 B
Chlorobenzene	5 J						

Notes:

Blank = Compound not detected

J = Estimated value, result below detection limit

B = Compound also found in blank

Table 6
NATIONAL AMUSEMENTS, INC.
BASE/NEUTRAL AND ACID EXTRACTABLE COMPOUNDS DETECTED IN TEST PIT SAMPLES

Parameter (µg/kg)	Test Pit Samples					
	TP-01-DIS	TP-02-DIS	TP-02	TP-03	TP-04	TP-05-DIS
Naphthalene	68 J		490	56 J		5,800,000
2-Methylnaphthalene			210 J	63 J		5,000,000
Acenaphthylene	110 J		190 J	65 J		1,300,000
Acenaphthene	220 J		210 J			380,000 J
Dibenzofuran	98 J		79 J			160,000 J
Fluorene	250 J		450	64 J		2,100,000
Phenanthrene	3,200		1,400	560	2,300 J	3,400,000
Anthracene	950		340 J	130 J		780,000
Fluoranthene	5,800		1,200	850	2,600 J	1,200,000
Pyrene	5,700		1,400	700	2,600 J	2,100,000
Benzo (b) fluoranthene	1,500		490	1,200		210,000 J
Benzo (k) fluoranthene	3,700		540	1,300		490,000
Benzo (a) pyrene	2,500		690	1,300		530,000
Benzo (a) anthracene	4,200		750	580		730,000
Chrysene	4,400		940	660		940,000
Indeno (1,2,3-cd) pyrene	2,700		450	1,700		480,000
Dibenzo (a,h) anthracene						130,000 J
Benzo (g, h, i,) perylene	840		510	2,000		130,000 J
Di-n-Butylphthalate						
bis (2-Ethylhexyl) phthalate	38 J		110 J			
2-Chloronaphthalene						
Benzoic Acid	250 J	2,700				
Isophorone		2,700				

Notes:

Blank = Compound not detected
J = Estimated value, result below detection limit

Table 6
NATIONAL AMUSEMENTS, INC.
BASE/NEUTRAL AND ACID EXTRACTABLE COMPOUNDS DETECTED IN TEST PIT SAMPLES

Parameter (µg/kg)	Test Pit Samples					
	TP-07	TP-08	TP-09	TP-12	TP-13	TP-14-DIS
Naphthalene	310 J	29,000	2,500		330 J	5,600,000
2-Methylnaphthalene	210 J	17,000 J	2,100		210 J	3,900,000
Acenaphthylene	1,800	7,300 J	1,300	17,000 J	720	1,300,000
Acenaphthene	650	4,700 J	960	5,000 J	640	880,000
Dibenzofuran	500		360 J		430	130,000 J
Fluorene	970	15,000 J	2,200	22,000 J	1,200	1,500,000
Phenanthrene	6,200	42,000	5,600	66,000	5,200	3,100,000
Anthracene	2,600	9,400 J	2,000	19,000 J	1,900	720,000
Fluoranthene	6,700	21,000 J	3,900	45,000	4,900	1,400,000
Pyrene	9,800	30,000	7,400	77,000	6,800	1,900,000
Benzo (b) fluoranthene	5,800	6,900 J	2,900	9,700 J	2,700	210,000 J
Benzo (k) fluoranthene	8,000	7,600 J	3,900	17,000 J	94 J	490,000
Benzo (a) pyrene	6,500	10,000 J	4,400	25,000 J	3,900	510,000
Benzo (a) anthracene	7,900	13,000 J	4,800	29,000 J	4,300	580,000
Chrysene	7,200	16,000 J	5,500	36,000	4,700	760,000
Indeno (1,2,3-cd) pyrene	2,800		1,900	14,000 J	1,100	470,000
Dibenzo (a,h) anthracene						
Benzo (g, h, i,) perylene	790		320 J		360 J	130,000 J
Di-n-Butylphthalate		2,300 J	110 J			
bis (2-Ethylhexyl) phthalate		4,200 J	700	1,600 J	550	
2-Chloronaphthalene			210 J			
Benzoic Acid						
Isophorone						

Notes:

Blank = Compound not detected

J = Estimated value, result below detection limit

Table 7
NATIONAL AMUSEMENTS, INC.
PESTICIDES AND PCBs DETECTED IN TEST PIT SAMPLES

Parameter (µg/kg)	Test Pit Samples											
	TP-01- DIS	TP-02- DIS	TP-02	TP-03	TP-04	TP-05- DIS	TP-07	TP-08	TP-09	TP-12	TP-13	TP-14- DIS
4,4' DDE			200		3,500	91		320	200	380	140 J	
4,4' DDD	48	11 J	380	240	68,000	550		2,500	600	1,200	570	
4,4' DDT		25	210		9,200			920	220 J	590	410	
delta BHC	28											
Endosulfan I				65			250					
PCB-1260						1,600						

Notes:

Blank = Compound not detected

J = Estimated value, result below detection limit

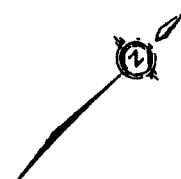
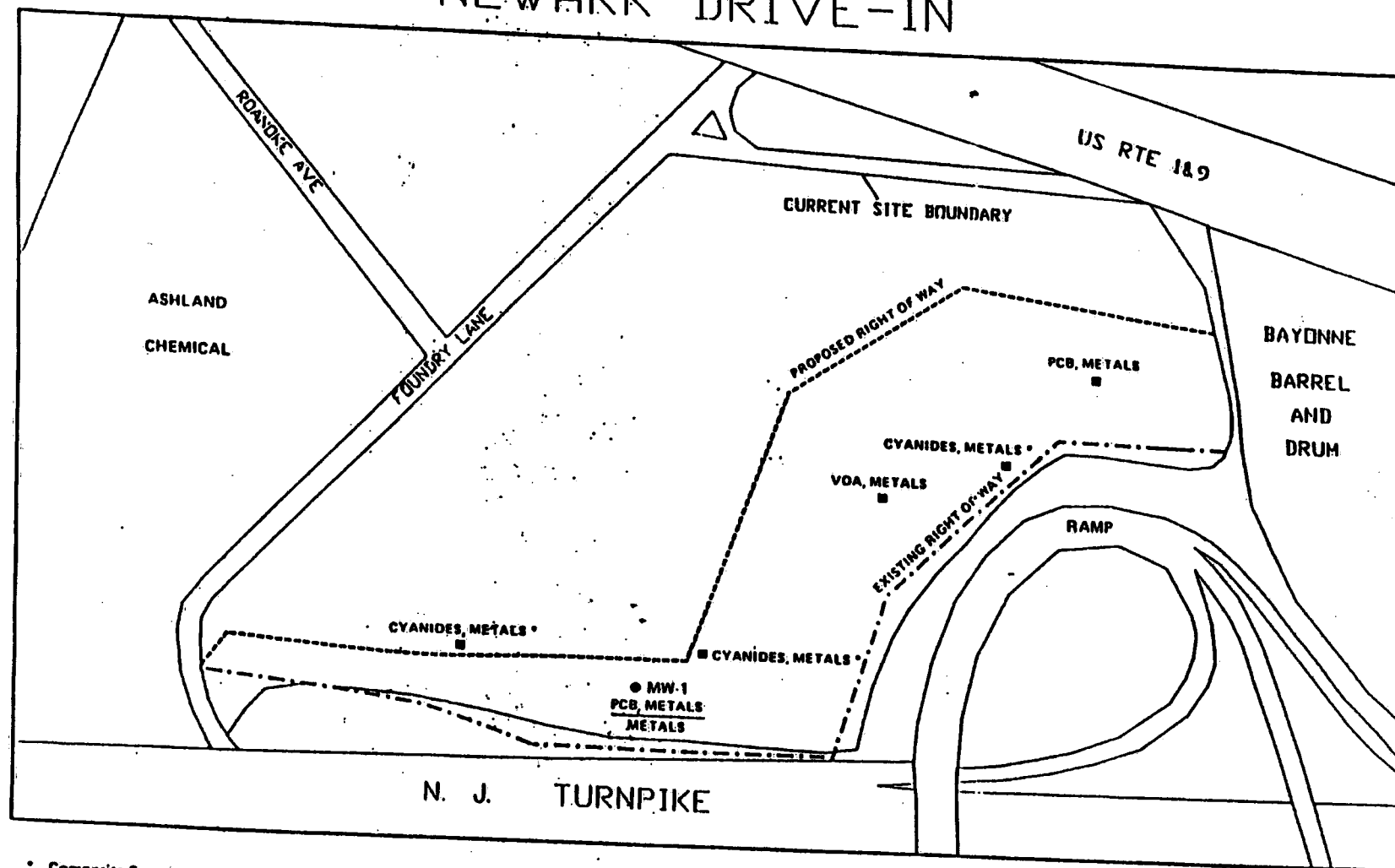
Table 8
NATIONAL AMUSEMENTS, INC.
METALS, CYANIDES, AND PETROLEUM HYDROCARBONS IN TEST PIT SAMPLES

Parameter (mg/kg)	Test Pit Samples					
	TP-01-DIS	TP-02-DIS	TP-02	TP-03	TP-04	TP-05-DIS
Aluminum	5,610	7,870	9,020	5,430	5,840	6,190
Antimony	<12	13.8	<12	<12	<12	46.7
Arsenic	14.2	9.1	7.8	10.4	198	19.3
Barium	237	381	245	196	326	1,450
Beryllium	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cadmium	<2.0	2.74	2.35	<2.0	4.2	26.6
Calcium	5,400	5,210	5,760	3,720	6,000	13,200
Chromium	19.5	53.3	30.0	20.5	17.8	1,420
Cobalt	<10	<10	<10	<10	<10	<10
Copper	106	127	99	207	91.7	788
Iron	14,200	15,600	16,600	25,600	18,400	38,600
Lead	438	556	274	875	745	15,400
Magnesium	1,920	1,570	2,370	1,360	2,100	2,270
Manganese	371	230	273	300	332	322
Mercury	0.95	2.40	1.67	2.59	0.83	2.28
Nickel	14.0	27.7	25.4	24.3	16.4	97.9
Potassium	709	718	739	572	622	706
Selenium	<1.0	1.0	1.2	<1.0	<1.0	8.7
Silver	<2.0	<2.0	<2.0	<2.0	<2.0	2.6
Sodium	233	516	391	434	317	467
Thallium	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Vanadium	22.1	17.3	18.7	18.0	21.5	31.9
Zinc	395	462	410	564	467	1,940*
Total Cyanides	0.69	14.2	11.1	1.78	0.89	22.6
Petroleum Hydrocarbons	480	33.4	204	190	608	673

Table 8
NATIONAL AMUSEMENTS, INC.
METALS, CYANIDES, AND PETROLEUM HYDROCARBONS IN TEST PIT SAMPLES

Parameter (mg/kg)	Test Pit Samples					
	TP-07	TP-08	TP-09	TP-12	TP-13	TP-14-DIS
Aluminum	5,710	4,980	5,940	4,980	7,790	2,000
Antimony	<12	53.3	15.6	20.6	13.5	<12
Arsenic	14.0	61.5	55.0	125	11.0	6.8
Barium	1,150	1,020	1,160	801	359	136
Beryllium	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cadmium	3.84	8.65	7.96	10.7	2.49	<2.0
Calcium	9,910	9,030	9,150	7,610	4,400	5,230
Chromium	63.5	131	84.1	53.8	50.8	14.5
Cobalt	<10	<10	11.9	<10	<10	<10
Copper	304	396	658	373	261	51.2
Iron	14,700	28,900	48,600	89,600	20,100	1,030
Lead	1,650	1,550	2,260	1,340	694	277
Magnesium	1,960	1,180	1,720	1,840	1,970	1,050
Manganese	195	246	380	532	231	82.1
Mercury	28.3	2.11	4.02	3.10	7.10	0.52
Nickel	37.7	62.9	67.1	70.2	35.8	62.0
Potassium	650	443	591	515	668	429
Selenium	1.6	4.1	<1.0	3.9	6.7	<1.0
Silver	23.3	3.4	<2.0	<2.0	<2.0	<2.0
Sodium	377	383	381	362	376	771
Thallium	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Vanadium	29.2	34.3	21.1	29.0	27.5	29.6
Zinc	733	1,730	2,040	2,180	579	114
Total Cyanides	5.72	9.45	7.84	9.20	17.9	11.4
Petroleum Hydrocarbons	1,010	1,380	1,030	2,970	339	not analyzed

NEWARK DRIVE-IN



0 100 200
SCALE IN FEET

LEGEND:

- SOIL SAMPLE
- MONITORING WELL WITH SOIL SAMPLE I.D.'S

Figure 4
POINTS ABOVE
ECRA CLEANUP LEVEL

- Composite Sample
- METALS - indicates excessive of 3 or more metals, otherwise specific metals are shown.

Table 1
SOIL BORING DESCRIPTIONS

Boring No.	Depth (inches)	Soil Description
M1186	0-6	Brown silt, friable, dry; trace fill (glass, white accretions)
	6-12	Brown sandy silt; dry, friable; some fill (black slag, grayish accretions)
	12-18	Fill (blackish brown woody fibers, decomposed brick, greenish smears and trace white accretions)
M1187	0-7	Poor recovery
	7-12	Grey and brown sand; some pebbles, dry, friable little sand accretions
	12-18	Moist black sand with black smears and fill (asphalt-like slag, blueglass, wood fibers, trace brick); distinct petroleum odor
M1243E	0-5	Fill (slag, trace silty)
	5-9	Fill (asphalt, slag, some silt)
	1-14	Same, little glass and silt
	14-18	Fill (cemented accretions, blue, white and gray)
M1234E2	0-5	Reddish brown silty sand with few pebbles, little greyish brown accretions
	5-15	black silt and fill (glass, slag) distinct petroleum odor
	15-18	Same, but some dense whitish crystalline deposits
M1243E3	0-4	No recovery
	4-10	Fill (yellowish accretions, slag, glass in brownish sandy silt matrix)
	10-15	Fill (bluish-black slag, silt, trace glass, brick and yellow accretions)
	15-18	Brown sandy silt and fill (slag, glass, yellow flakes, pebbles)

Table 3
BORING LOG OF MONITORING WELL 1

<u>Boring No.</u>	<u>Depth (feet)</u>	<u>Soil Description</u>
M2050	0-0.5	Brown silt, moist, dense with 20% pebbles; and fill (miscellaneous); trace clay
	0.5-1.0	Same with more fill (asphalt-like material, glass, brick); distinct petroleum odor
	1.0-1.5	Dry brown silt and fill (dense black asphalt-like material; slag, brick, yellow white particles on asphalt surface)
	3.0-4.0	moist black silt, friable with trace fill (tarry material); distinct petroleum odor
	4.0-4.5	Same but some dense oil covered silt and little construction debris (decomposed brick, slag and glass)
M2052	8-8.5	Dense, friable black silt, moist; some fill (glass); distinct petroleum odor
	8.5-9.0	Fill (coarse gravel, pebbles, multicolored undifferentiated waste), moist
	9.0-10.0	Fill (glass, pebbles, tar, paint chips, concretions of slag and brick); distinct petroleum odor
	13-14	Gray-brown silt clay coated with oily leachate, red streaks, very sticky, very plastic
	14-14.5	Same with oily smears but no red streaks
	14.5-15.0	Brown clay with some silt and sand grading to a sandy clay, rust streaks; weak petroleum odor

Table 6

Results of Analyses

Sample #	M 1186	M 1187	M 1243	M 2050	M 2052	M 1218
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/L
Date of Submission	25-Apr	25-Apr	25-Apr	07-May	07-May	27-May
Location	G-1	G-2	COMP	WELL #3	WELL #3	WELL #3
Depth	0-18"	0-18"	0-18"	0-18"	8-10'	
Composite/Discrete	D	D	C	D	D	D
Soil/Water	S	S	S	S	S	W
VOLATILE ORGANICS						
Priority Pollutants						
Benzene	ND	220	ND	1.6	ND	ND
Ethylbenzene	ND	131	ND	1.8	ND	ND
Methylene chloride	84	40	184	ND UJ2	ND UJ3	ND UJ1
Toluene	ND	245	8	ND	ND	ND
Totals	84	636	192	3.4	0	0
Volatile Organics, Additional Peaks (Semi-Quantitative)						
2-Propanone	29	ND	ND	ND	ND	
2-Propanone	ND	ND	ND	ND	ND	
Dimethyl-Benzene	ND	981	ND	ND	ND	
ACID EXTRACTABLES						
2,4-Dimethylphenol	ND	ND	ND	3,200	ND	ND
Phenol	ND	ND	ND	430	ND	ND
BASE/NEUTRAL EXTRACTABLES						
Acenaphthene	ND	74,400	11,000 J	2,710	3,660	ND
Acenaphthylene	2,100	30,800	3,000 J	BMDL	1,430	ND
Anthracene	8,240	18,600	14,000 J	4,820	8,350	ND
Benzidine	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	14,200	23,180	30,200 J	12,100	9,250	ND
Benzo(a)pyrene	11,500	150,000	49,000 J	13,400	12,900	ND
Benzo(b)fluoranthene	7,300	214,100	60,100 J	20,500	14,300	ND
Benzo(ghi)perylene	7,200	101,800	33,500 J	6,670	7,560	ND
bis(2-Ethylhexyl)phthalate	940	ND	ND	2,540	13,500	ND
2-Chloronaphthalene	ND	ND	4,300 J	ND	ND	ND
Chrysene	17,000	21,060	31,100 J	11,900	9,760	ND
Dibenzo(a,h)anthracene	1,500	79,650	9,700 J	2,360	1,910	ND
Di-n-butyl phthalate	ND	ND	2,900 J	BMDL	1,040	ND
Fluoranthene	24,700	348,000	47,400 J	20,600	11,600	ND
Fluorene	13,900	292,000	16,000 J	BMDL	12,900	ND
Indeno(1,2,3-c,d)pyrene	5,100	62,830	23,700 J	5,370	4,930	ND
Naphthalene	36,500	790,000	28,200 J	3,520	28,600	ND
Phenanthrene	54,000	822,000	52,400 J	15,600	35,200	ND
Pyrene	38,700	472,000	61,600 J	26,000	15,200	ND
Totals	242,880	3,500,420	478,100	148,090	192,090	0

J-Estimated concentrations; two surrogates out of control limits.

UJ1-Estimated quantitation limit 11.7 ug/l

UJ2-Estimated quantitation limit 4.2 ug/kg

Table 6 (continued)

Sample #	M 1186	M 1187	M 1243	M 2050	M 2052	M 1218
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/g
Date of Submission	25-Apr	25-Apr	25-Apr	07-May	07-May	27-May
Location	G-1	G-2	COMP	WELL #3	WELL #3	WELL #3
Depth	0-18"	0-18"	0-18"	0-18"	8-10'	
Composite/Discrete	D	D	C	D	D	D
Soil/Water	S	S	S	S	S	W

Base/Neutral/Acid Extractables, Additional Peaks (Semi-Quantitative)

Parameter	M1186	M1187	M1243	M2050	M2052	M1218
14-Benzo(B)Fluorene	ND	81,700	ND	ND	ND	ND
1-Methyl Anthracene	ND	128,000	ND	ND	241	ND
1.1'-Biphenyl	ND	ND	ND	ND	ND	ND
1.1-Biphenyl	ND	93,100	ND	ND	ND	ND
2-Ethyl Naphthalene	ND	ND	8,190	ND	ND	ND
2-Methyl 1.1-Biphenyl	ND	94,300	ND	ND	ND	ND
2-Methyl Anthracene	ND	51,500	ND	ND	ND	ND
2-Methyl Anthracene	9,580	ND	ND	ND	ND	ND
2-Methyl Naphthalene	12,100	ND	ND	ND	ND	ND
2-Methyl Naphthalene	ND	ND	15,400	ND	ND	ND
2-Methyl Phenanthrene	9,330	ND	ND	ND	ND	ND
3-Methyl Phenanthrene	ND	194,000	ND	ND	ND	ND
4-Methyl Phenanthrene	ND	106,000	ND	ND	ND	ND
4-Methyl Phenanthrene	ND	ND	7,550	ND	ND	ND
Alkane	ND	ND	9,360	ND	412	ND
Alkane	7,890	ND	ND	ND	ND	ND
Alkane	7,610	ND	ND	ND	305	ND
Cyclohexene, Pentyl	ND	ND	ND	ND	276	ND
Dibenzothiophene	ND	ND	ND	2,830	ND	ND
Diethyl Benzene	ND	ND	ND	3,700	ND	ND
Dimethyl 2-Pentene	ND	ND	ND	ND	ND	ND
Dimethyl Naphthalene	26,000	ND	ND	ND	3,037	ND
Dimethyl Naphthalene	ND	854,000	ND	ND	ND	ND
Dimethyl Naphthalene	ND	ND	24,500	ND	ND	ND
Dimethyl Naphthalene	ND	109,000	ND	ND	ND	ND
Dimethyl Phenanthrene	7,720	ND	ND	1,570	ND	ND
Dimethyl Phenanthrene	ND	ND	ND	ND	ND	ND
Dimethyl Phenol	ND	58,100	ND	ND	364	ND
Ethyl Naphthalene	ND	ND	6,470	ND	ND	ND
Ethyl-Dimethyl Benzene	ND	ND	ND	1,770	ND	ND
Ethyl-Methyl Benzene	ND	ND	ND	ND	ND	ND
Ethyl-Methyl Benzene	ND	49,600	ND	ND	940	ND
Ethyl-Methyl Benzene	ND	ND	ND	ND	373	ND
Ethyl-Methyl Benzene	ND	ND	ND	ND	927	ND
Methyl 9H-Fluorene	ND	ND	ND	ND	ND	7
Methyl Anthracene	ND	ND	ND	1,670	ND	ND
Methyl Benzene	ND	184,900	ND	ND	ND	ND
Methyl Fluorene	ND	1,170,000	ND	ND	ND	ND
Methyl Naphthalene	ND	ND	ND	6,780	ND	ND
Methyl Naphthalene	20,000	ND	ND	ND	ND	ND

Table 6 (continued)

Sample #	M 1186	M 1187	M 1243	M 2050	M 2052	M 1218
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/L
Date of Submission	25-Apr	25-Apr	25-Apr	07-May	07-May	27-May
Location	G-1	G-2	COMP	WELL #3	WELL #3	WELL #3
Depth	0-18"	0-18"	0-18"	0-18"	8-10'	
Composite/Discrete	D	D	C	D	D	D
Soil/Water	S	S	S	S	S	W
Methyl Naphthalene	ND	ND	ND	ND	4,150	ND
Methyl Naphthalene	ND	ND	27,900	ND	ND	ND
Methyl Phenanthrene	10,500	ND	ND	ND	ND	ND
Methyl Phenanthrene	ND	ND	ND	ND	569	ND
Methyl Phenol	ND	ND	ND	6,190	ND	ND
Methyl-Methyl Ethyl Benzene	ND	ND	ND	ND	440	ND
Naphthalene, Decahydro, Trans	10,000	ND	ND	ND	ND	ND
Naphthalene, Decahydro, Trans	ND	ND	7,290	ND	ND	ND
Propyl Benzene	ND	ND	ND	0	353	ND
Tetramethyl Benzene	ND	ND	6,990	ND	ND	ND
Tetramethyl Benzene	ND	ND	ND	2,040	ND	ND
Trimethyl Benzene	ND	ND	6,120	ND	ND	ND
Trimethyl Naphthalene	ND	210,000	ND	ND	ND	ND
Trimethyl Naphthalene	ND	ND	ND	ND	627	ND
Xylene	ND	ND	6,810	ND	ND	ND
Xylene	ND	ND	ND	ND	236	ND
TOTAL PHENOLICS AND CYANIDES						
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L
Phenolics, Total	0.32	0.63	0.08	2.80	1.5	<.05
Cyanide, Total	0.75	4.4	15	1.1	1.2	<.025
PCB						
UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/L
Aroclor 1254	18,000 J1	ND	ND	ND	ND	ND
Aroclor 1260	ND	ND	ND	23000 J1	ND	ND
METALS						
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/L
Antimony	1.7	1.4	5.6	15	6.7	3.1
Arsenic	26	1,200	25	760	46	2
Beryllium	0.11	0.46	0.46	0.6	0.44	ND
Cadmium	4	3.2	33	18	12	0.83
Chromium	43	60	860	240	240	1.4
Copper	91	250	2,560	690	530	7.8
Lead	1,390	740	4,100	3,000	1,840	ND
Mercury	2.4	1.3	3.7	3.9	11.1	ND
Nickel	38	120	340	120	73	ND
Selenium	ND	ND	ND	1.8	ND	ND
Silver	1.2	1.2	2.9	3.3	1.4	ND
Thallium	ND	0.14	0.63	0.26	0.29	ND
Zinc	500	2,120	2,830	2,190	1,900	29

J1- Estimated concentration; sample reextracted past holding time allowed under 40 CFR part 136

Table 6 (continued)

Sample #	M 1186	M 1187	M 1243	M 2050	M 2052	M 1218
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/L
Date of Submission	25-Apr	25-Apr	25-Apr	07-May	07-May	27-May
Location	G-1	G-2	COMP	WELL #3	WELL #3	WELL #3
Depth	0-18"	0-18"	0-18"	0-18"	8-10'	
Composite/Discrete	D	D	C	D	D	D
Soil/Water	S	S	S	S	S	W

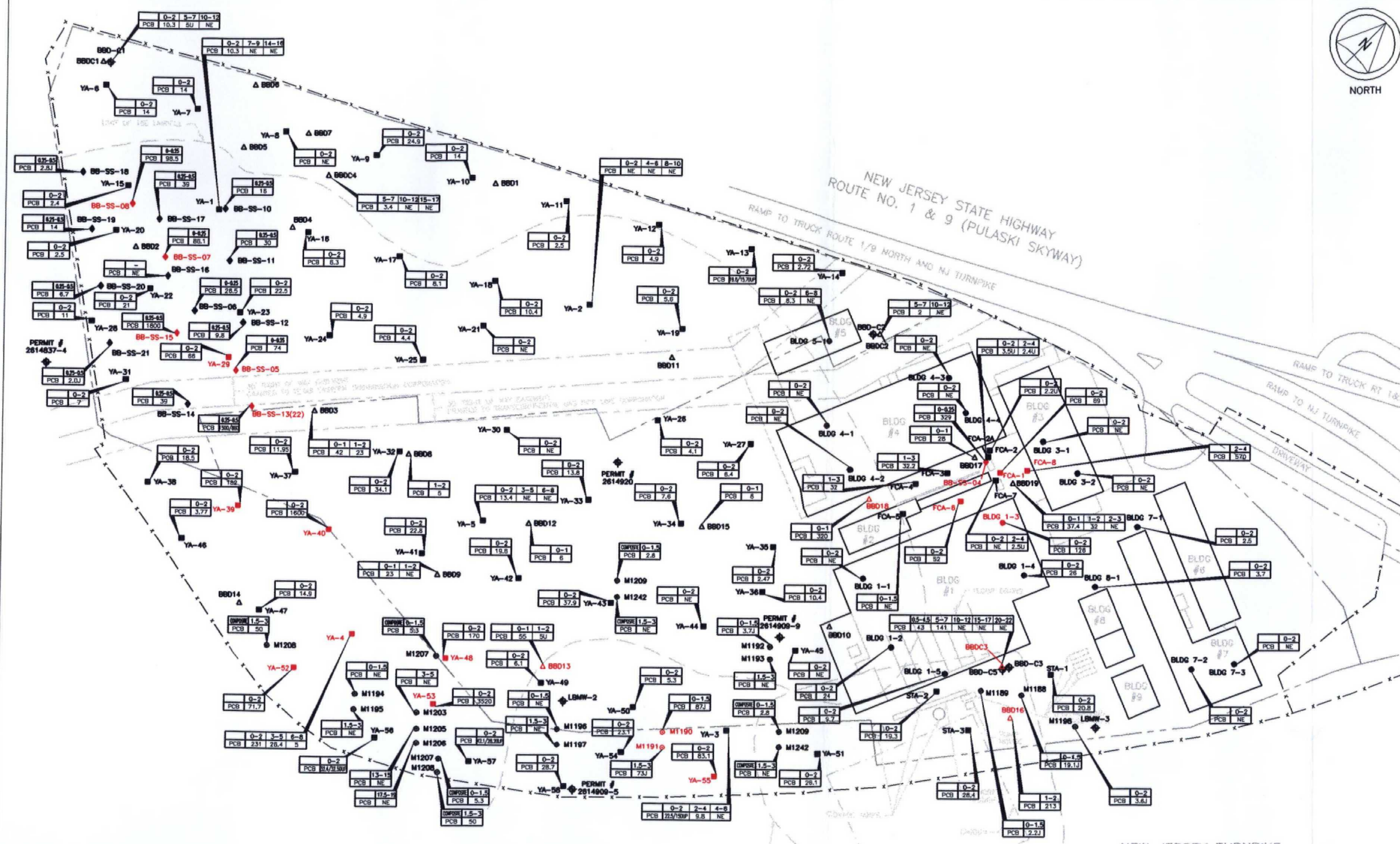
PESTICIDES

4,4'-DDT	ND	ND	ND	ND	3000 J1	ND
4,4'-DDE	ND	ND	2,900 J1	ND	610 J1	ND
4,4'-DDD	ND	ND	ND	ND	1500 J1	ND
Endrin aldehyde	ND	530 J1	ND	ND	ND	ND
Heptachlor epoxide	ND	2,800 J1	840 J1	ND	ND	ND

J1-Estimated concentration; sample reextracted past holding time allowed under 40 CFR part 136

Appendix C

Bayonne Barrel and Drum Site Data Figures



LEGEND

- PROPERTY LINE
 - ◆ BB-C2 EXISTING MONITORING WELL LOCATION, VARIOUS CONSULTANTS
 - Δ BB01 SOIL SAMPLE LOCATION PERFORMED BY DAN RAVI & ASSOCIATES, IN 1985
 - M1190 SOIL SAMPLE LOCATION PERFORMED BY LOUIS BERGER & ASSOCIATES, IN 1986
 - ◆ BB-SS-04 SURFACE SOIL SAMPLE LOCATION PERFORMED BY USEPA, IN 1994 & 1995
 - YA-1 SOIL SAMPLE LOCATION PERFORMED BY BLASLAND, BOUCK & LEE, INC., IN 1997
 - BLDG 1-3 SOIL SAMPLE LOCATION PERFORMED BY QUEST ENVIRONMENTAL & ENGINEERING SERVICES, INC., IN 2002
 - - - EXISTING FENCE LINE
 - - - FILL AREA LIMIT LINE
- | PARAMETER | DEPTH (FEET) | RESULT (PPM) |
|-----------|---|--------------|
| NE | DOES NOT EXCEED THE NJDEP NON-RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA (NRDSCC) | |
| U | NOT DETECTED AT THE CONCENTRATION INDICATED. DETECTION LIMIT EXCEEDS THE NRDSCC | |
| J | ESTIMATED CONCENTRATION | |
| SYMBOL | NRDSCC | |
| PCB | 2 | |
- RED HIGHLIGHT INDICATES A SAMPLE POINT THAT EXCEEDS 50 PPM

SOURCE:
BASED UPON "SOIL SAMPLING LOCATIONS"
PREPARED BY BLASLAND, BOUCK & LEE, INC.,
REVISED BY DE MAXIMS, INC. ON JANUARY 2002.

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Phone: (908) 730-7707

**SOIL SAMPLE LOCATION MAP
WITH ANALYTICAL RESULTS FOR PCBs**

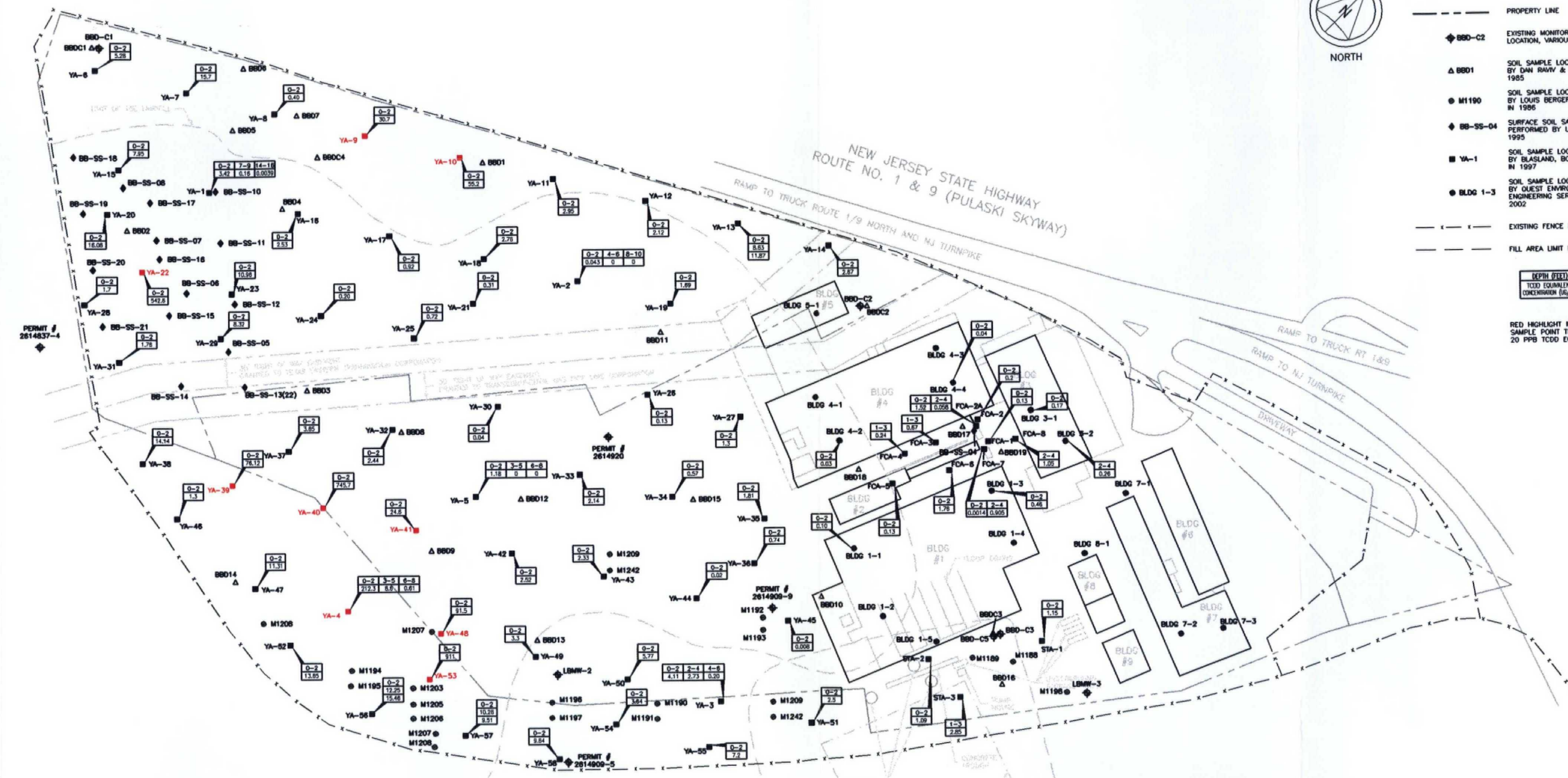
BAYONNE BARREL & DRUM SITE
NEWARK, NEW JERSEY

PROJECT NO.	CHK'D: DV	SCALE: 1" = 50'	DRAWING NO.	REV. NO.
ENG.		CAD FILE NO. BBD-006		
APPVD.		SHEET NO. 1 OF 1		0



LEGEND

- PROPERTY LINE
- ◆ BBD-C2 EXISTING MONITORING WELL LOCATION, VARIOUS CONSULTANTS
- △ BBD1 SOIL SAMPLE LOCATION PERFORMED BY DAN RAVY & ASSOCIATES, IN 1985
- M1190 SOIL SAMPLE LOCATION PERFORMED BY LOUIS BERGER & ASSOCIATES, IN 1986
- ◆ BB-SS-04 SURFACE SOIL SAMPLE LOCATION PERFORMED BY USEPA, IN 1994 & 1995
- YA-1 SOIL SAMPLE LOCATION PERFORMED BY BLASLAND, BOUCK & LEE, INC., IN 1997
- BLDG 1-3 SOIL SAMPLE LOCATION PERFORMED BY QUEST ENVIRONMENTAL & ENGINEERING SERVICES, INC., IN 2002
- - - EXISTING FENCE LINE
- - - FILL AREA LIMIT LINE
- DEPTH (FEET)
TCDD EQUIVALENT
CONCENTRATION (UG/KG)
- RED HIGHLIGHT INDICATES A SAMPLE POINT THAT EXCEEDS 20 PPB TCDD EQUIV



SOURCE:
BASED UPON "SOIL SAMPLING LOCATIONS"
PREPARED BY BLASLAND, BOUCK & LEE, INC.,
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**SOIL SAMPLE LOCATION MAP
WITH ANALYTICAL RESULTS FOR
DIOXINS/DIBENZOFURANS**

BAYONNE BARREL & DRUM SITE
NEWARK, NEW JERSEY

PROJECT NO.	CHK'D: DV	SCALE: 1" = 50'	DRAWING NO.	REV. NO.
ENG.	CAD FILE NO. BBD-009			
APPVD.	SHEET NO. 1 OF 1			0





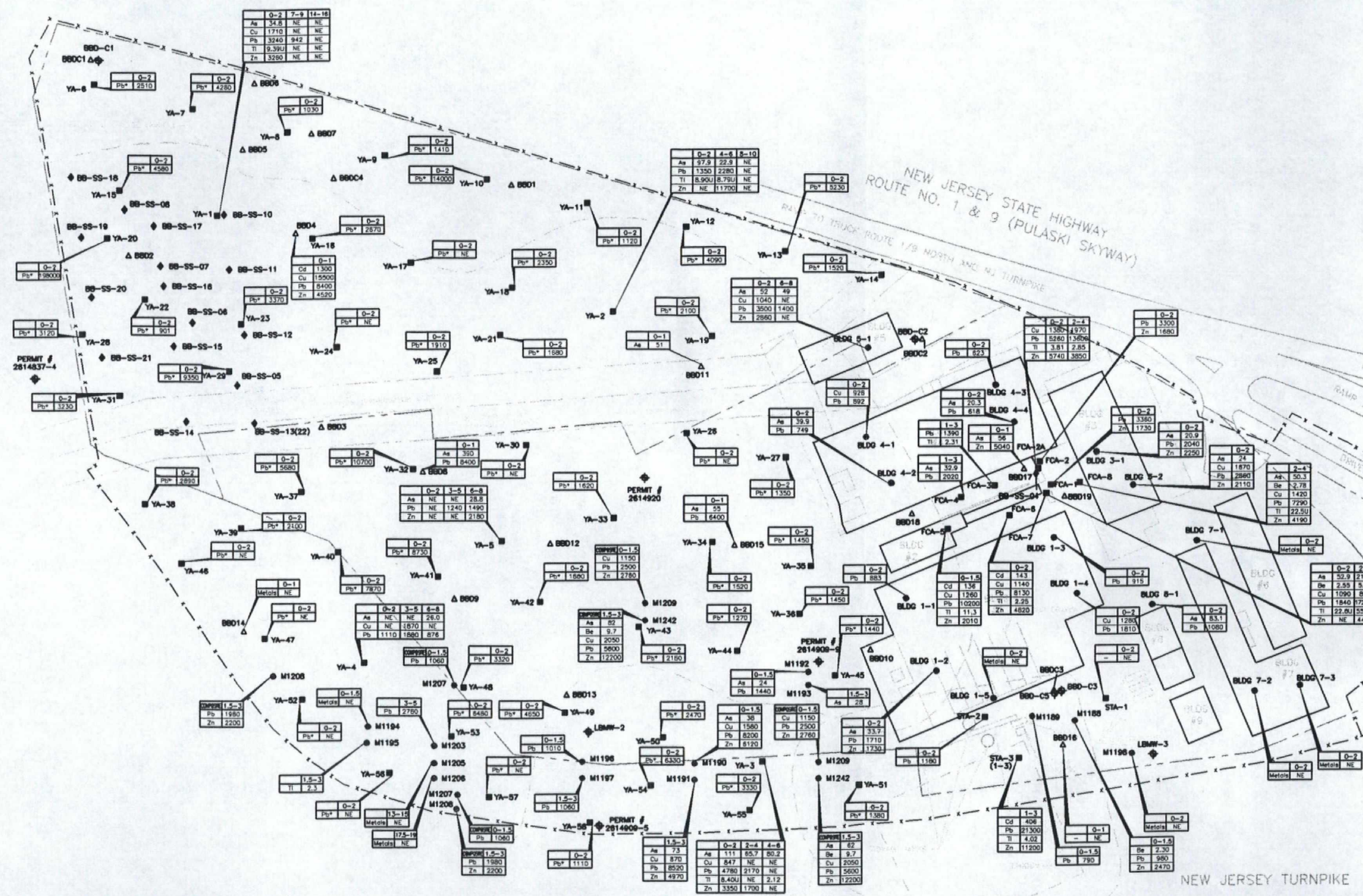
LEGEND

- PROPERTY LINE
- ◆ BBD-C2 EXISTING MONITORING WELL LOCATION, VARIOUS CONSULTANTS
- △ BBD1 SOIL SAMPLE LOCATION PERFORMED BY DAN RAVY & ASSOCIATES, IN 1985
- M1190 SOIL SAMPLE LOCATION PERFORMED BY LOUIS BERGER & ASSOCIATES, IN 1986
- ◆ BB-SS-04 SURFACE SOIL SAMPLE LOCATION PERFORMED BY USEPA, IN 1994 & 1995
- YA-1 SOIL SAMPLE LOCATION PERFORMED BY BLASLAND, BOUCK & LEE, INC., IN 1997
- BLDG 1-3 SOIL SAMPLE LOCATION PERFORMED BY QUEST ENVIRONMENTAL & ENGINEERING SERVICES, INC., IN 2002
- - - EXISTING FENCE LINE
- - - FILL AREA LIMIT LINE

PARAMETER	DEPTH (FEET)	RESULT (MG/KG)
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NE - DOES NOT EXCEED THE ALFRED NON-RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA (NRDCSCC)
U - NOT DETECTED AT THE CONCENTRATION INDICATED, DETECTION LIMIT EXCEEDS THE NRDCSCC
Pb* - INDICATES LEAD WAS THE ONLY METAL ANALYZED IN THE SAMPLE

SYMBOL	METAL	NRDCSCC
As	Arsenic	20
Be	Beryllium	2
Cd	Cadmium	100
Cu	Copper	600
Pb	Lead	600
Tl	Thallium	2
Zn	Zinc	1500



SOURCE:
BASED UPON "SOIL SAMPLING LOCATIONS"
PREPARED BY BLASLAND, BOUCK & LEE, INC.,
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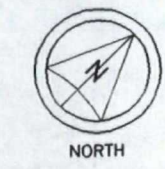
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Phone: (908) 730-7707

**SOIL SAMPLE LOCATION MAP
WITH ANALYTICAL RESULTS FOR METALS**

BAYONNE BARREL & DRUM SITE
NEWARK, NEW JERSEY

PROJECT NO.	CHK'D: DV	SCALE: 1" = 50'	DRAWING NO.	REV. NO.
ENG.	CAD FILE NO. BBD-005			
APPVD.	SHEET NO. 1 OF 1			0





LEGEND

- PROPERTY LINE
- EXISTING MONITORING WELL LOCATION, VARIOUS CONSULTANTS
- ▲ BBD1 SOIL SAMPLE LOCATION PERFORMED BY DAN RAVY & ASSOCIATES, IN 1985
- M1190 SOIL SAMPLE LOCATION PERFORMED BY LOUIS BERGER & ASSOCIATES, IN 1986
- ◆ BB-SS-04 SURFACE SOIL SAMPLE LOCATION PERFORMED BY USEPA, IN 1994 & 1995
- YA-1 SOIL SAMPLE LOCATION PERFORMED BY BLASLAND, BOUCK & LEE, INC., IN 1997
- BLDG 1-3 SOIL SAMPLE LOCATION PERFORMED BY QUEST ENVIRONMENTAL & ENGINEERING SERVICES, INC., IN 2002

- EXISTING FENCE LINE
- FILL AREA LIMIT LINE

PARAMETER	DEPTH (FEET)	RESULT (MG/KG)
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NE - DOES NOT EXCEED THE MDEP NON-RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA (NRDSCC)
U - NOT DETECTED AT THE CONCENTRATION INDICATED, DETECTION LIMIT EXCEEDS THE NRDSCC
J - INDICATES AN ESTIMATED VALUE WHEN THE CONCENTRATION IS BELOW THE DETECTION LIMIT

COMPOUND	NRDSCC (PPM)
Pentachlorophenol	24
2,4-Dinitrotoluene	4
Hexachlorobenzene	2
Chrysene	40
Benzo(a)pyrene	0.66
Benzo(b)fluoranthene	4
Benzo(k)fluoranthene	4
Bis(2-ethylhexyl)phthalate	210
Dibenz(a,h)anthracene	0.66
Indeno(1,2,3-cd)pyrene	4

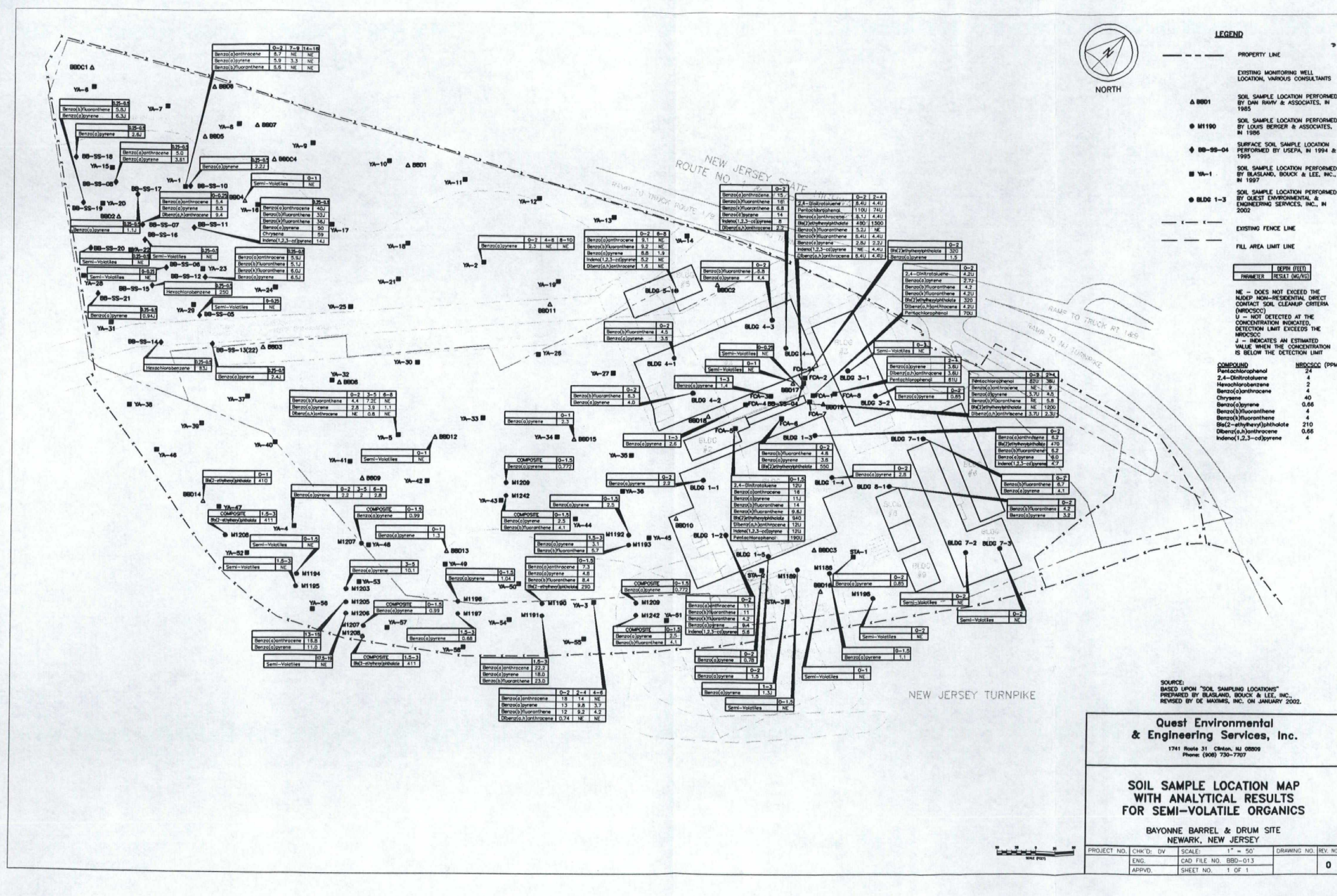
SOURCE:
BASED UPON "SOIL SAMPLING LOCATIONS"
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SOIL SAMPLE LOCATION MAP
WITH ANALYTICAL RESULTS
FOR SEMI-VOLATILE ORGANICS

BAYONNE BARREL & DRUM SITE
NEWARK, NEW JERSEY

PROJECT NO.	CHK'D: DV	SCALE: 1" = 50'	DRAWING NO.	REV. NO.
ENG.	CAD FILE NO. BBD-013			0
APPVD.	SHEET NO. 1 OF 1			





LEGEND

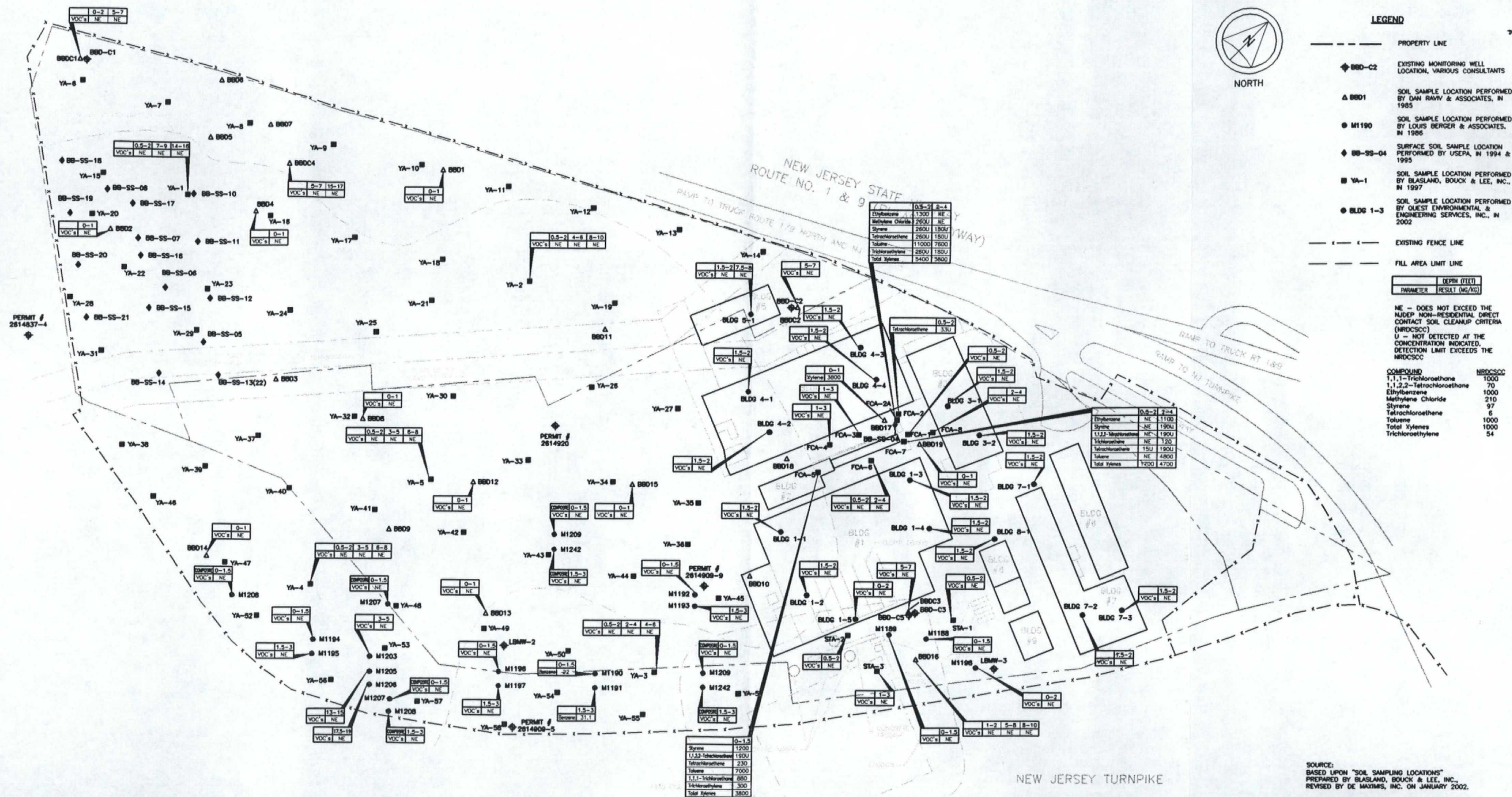
- PROPERTY LINE
- EXISTING MONITORING WELL LOCATION, VARIOUS CONSULTANTS
- SOIL SAMPLE LOCATION PERFORMED BY DAN RAVIN & ASSOCIATES, IN 1985
- SOIL SAMPLE LOCATION PERFORMED BY LOUIS BERGER & ASSOCIATES, IN 1986
- SURFACE SOIL SAMPLE LOCATION PERFORMED BY USEPA, IN 1994 & 1995
- SOIL SAMPLE LOCATION PERFORMED BY BLASLAND, BOUCK & LEE, INC., IN 1997
- SOIL SAMPLE LOCATION PERFORMED BY QUEST ENVIRONMENTAL & ENGINEERING SERVICES, INC., IN 2002

- EXISTING FENCE LINE
- FILL AREA LIMIT LINE

PARAMETER	DEPTH (FEET)	RESULT (MG/MS)
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NE - DOES NOT EXCEED THE NJDEP NON-RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA (NRDCSCC)
U - NOT DETECTED AT THE CONCENTRATION INDICATED. DETECTION LIMIT EXCEEDS THE NRDCSCC

COMPOUND	NRDCSCC
1,1,1-Trichloroethane	1000
1,1,2,2-Tetrachloroethane	70
Ethylbenzene	1000
Methylene Chloride	210
Styrene	97
Tetrachloroethane	6
Toluene	1000
Trichloroethylene	54



SOURCE:
BASED UPON "SOIL SAMPLING LOCATIONS"
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SOIL SAMPLE LOCATION MAP WITH ANALYTICAL RESULTS FOR VOLATILE ORGANIC COMPOUNDS

BAYONNE BARREL & DRUM SITE
NEWARK, NEW JERSEY

PROJECT NO.	CHK'D: DV	SCALE: 1" = 50'	DRAWING NO.	REV. NO.
ENG.	CAD FILE NO. BBD-007			0
APP'D.	SHEET NO. 1 OF 1			



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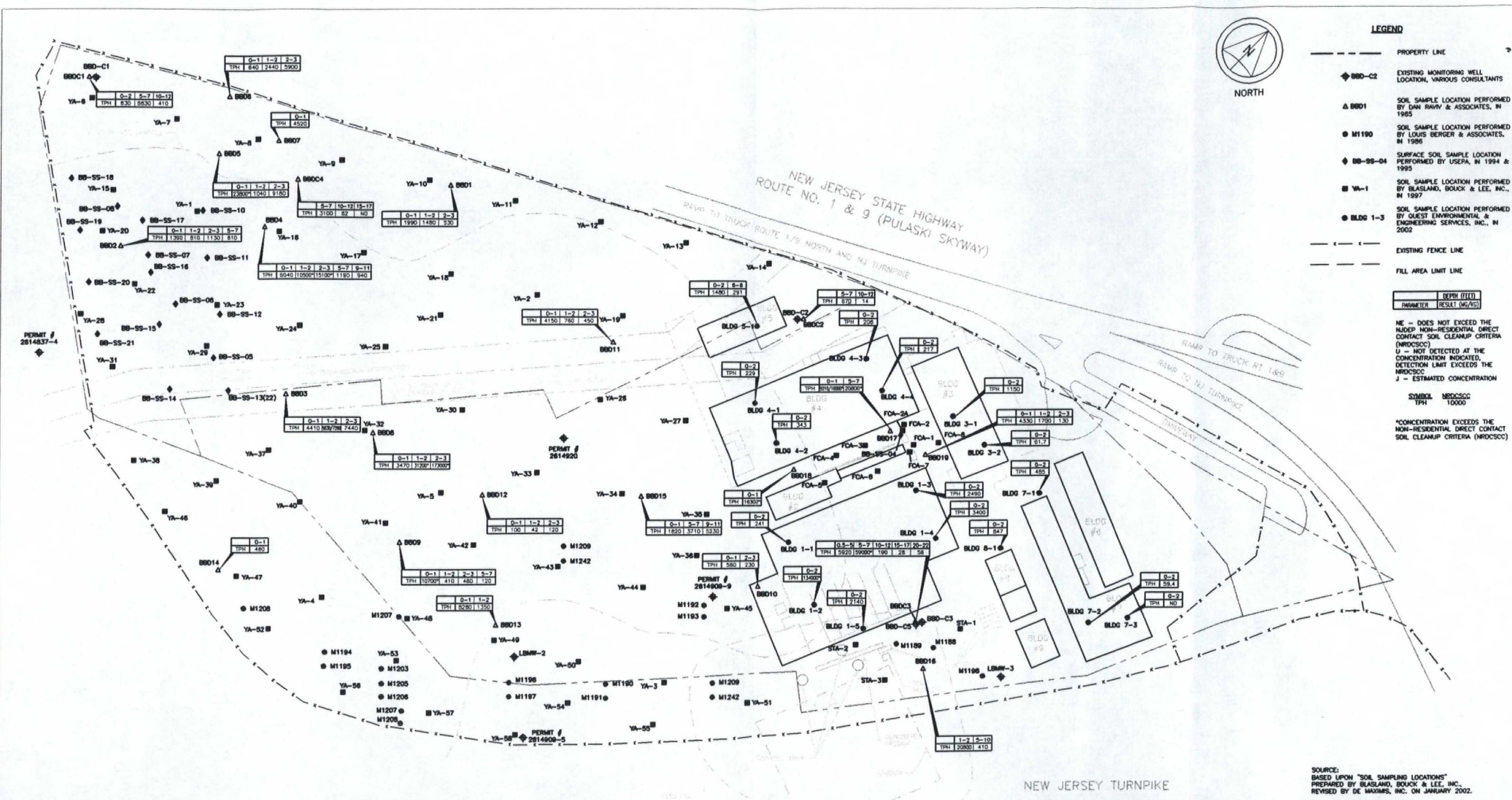
- PROPERTY LINE
- ◆ BBD-C2 EXISTING MONITORING WELL LOCATION, VARIOUS CONSULTANTS
- ▲ BBD1 SOIL SAMPLE LOCATION PERFORMED BY DAN RAVIV & ASSOCIATES, IN 1985
- M1190 SOIL SAMPLE LOCATION PERFORMED BY LOUIS BERGER & ASSOCIATES, IN 1986
- ◆ BB-SS-04 SURFACE SOIL SAMPLE LOCATION PERFORMED BY USEPA, IN 1994 & 1995
- YA-1 SOIL SAMPLE LOCATION PERFORMED BY BLASLAND, BOUCK & LEE, INC., IN 1997
- BLDG 1-3 SOIL SAMPLE LOCATION PERFORMED BY QUEST ENVIRONMENTAL & ENGINEERING SERVICES, INC., IN 2002
- - - EXISTING FENCE LINE
- - - FILL AREA LIMIT LINE

PARAMETER	DEPTH (FEET)	RESULT (MG/KG)
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NE - DOES NOT EXCEED THE NJ DEP NON-RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA (NRDCSCC)
U - NOT DETECTED AT THE CONCENTRATION INDICATED, DETECTION LIMIT EXCEEDS THE NRDCSCC
J - ESTIMATED CONCENTRATION

SYMBOL NRDCSCC
TPH 10000

*CONCENTRATION EXCEEDS THE NON-RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA (NRDCSCC)



SOURCE:
BASED UPON "SOIL SAMPLING LOCATIONS"
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**SOIL SAMPLE LOCATION MAP
WITH ANALYTICAL RESULTS FOR
TOTAL PETROLEUM HYDROCARBONS**

BAYONNE BARREL & DRUM SITE
NEWARK, NEW JERSEY

PROJECT NO.	CHK'D: DV	SCALE: 1" = 50'	DRAWING NO.	REV. NO.
ENG.	CAD FILE NO. BBD-010			
APPVD.	SHEET NO. 1 OF 1			0





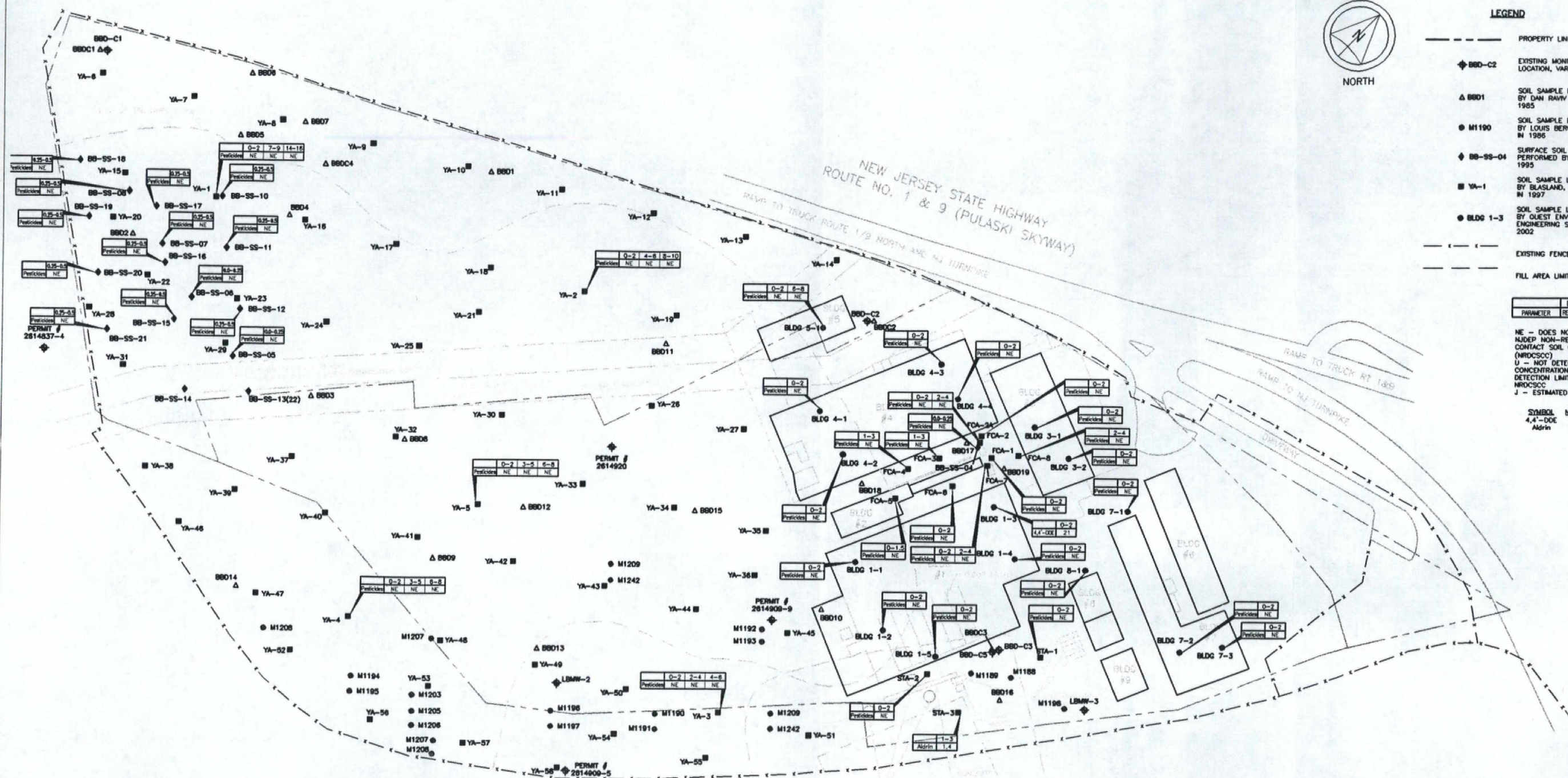
LEGEND

- PROPERTY LINE
- ◆ BBD-C2 EXISTING MONITORING WELL LOCATION, VARIOUS CONSULTANTS
- △ BBD1 SOIL SAMPLE LOCATION PERFORMED BY DAN RAVY & ASSOCIATES, IN 1985
- M1190 SOIL SAMPLE LOCATION PERFORMED BY LOUIS BERGER & ASSOCIATES, IN 1986
- ◆ BB-SS-04 SURFACE SOIL SAMPLE LOCATION PERFORMED BY USEPA, IN 1994 & 1995
- YA-1 SOIL SAMPLE LOCATION PERFORMED BY BLASLAND, BOUCK & LEE, INC., IN 1997
- BLDG 1-3 SOIL SAMPLE LOCATION PERFORMED BY QUEST ENVIRONMENTAL & ENGINEERING SERVICES, INC., IN 2002
- - - EXISTING FENCE LINE
- - - FILL AREA LIMIT LINE

PARAMETER	DEPTH (FEET)	RESULT (MG/KG)
-----------	--------------	----------------

NE - DOES NOT EXCEED THE MAJOR NON-RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA (NRDCSCC)
U - NOT DETECTED AT THE CONCENTRATION INDICATED, DETECTION LIMIT EXCEEDS THE NRDCSCC
J - ESTIMATED CONCENTRATION

SYMBOL	NRDCSCC
4,4'-DDE	9
Aldrin	0.17



SOURCE:
BASED UPON "SOIL SAMPLING LOCATIONS"
PREPARED BY BLASLAND, BOUCK & LEE, INC.,
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SOIL SAMPLE LOCATION MAP WITH ANALYTICAL RESULTS FOR PESTICIDES

BAYONNE BARREL & DRUM SITE
NEWARK, NEW JERSEY

PROJECT NO.	CHK'D: DV	SCALE: 1" = 50'	DRAWING NO.	REV. NO.
	ENG.	CAD FILE NO. BBD-011		
	APPVD.	SHEET NO. 1 OF 1		0